

هنا صدقنا القول



# FINANCIAL TIMES

Sombor IMF sheds few tears for Argentina, Page 2

EUROPE'S BUSINESS NEWSPAPER

No. 29,299

Monday April 16 1984

D 8523 B

## NEWS SUMMARY

**GENERAL**

**Violence obstructs Lebanon progress**

A weekend of violence in which haphazard shelling of residential areas killed 29 people in Beirut left a disengagement plan for the warring militias in Lebanon and a Syrian-Lebanese summit beyond reach. There was no political progress.

The Shiite Amal movement released a U.S. professor and a Frenchman who had been kidnapped in West Beirut in February. Page 3

**Howe in Peking**

British Foreign Minister Sir Geoffrey Howe meets his Chinese counterpart Wu Xueqin in Peking today for the first high-level talks on the future of Hong Kong for more than 18 months. Page 20

**Punjab railway fires**

Sikh extremists set fire to at least 34 railway stations in dawn raids. Premier Indira Gandhi called an emergency cabinet meeting. Page 3

**Spain jails colonels**

A Spanish court martial cashiered three colonels and sentenced them to 12 years and a day in prison for plotting a bid to stop the 1982 general election. A fourth colonel was acquitted. Page 3

**Berlin air protest**

Britain, the U.S. and France protested to the Soviet Union about continuing restrictions on "their" flights in the three air corridors between West Germany and Berlin. Page 3

**Soviet flight inquiry**

French military authorities have begun an inquiry into a flight by a Soviet civilian airliner over a secret naval base near Toulon. Page 2

**Supplies for Salyut**

Soviet Union launched an unmanned spacecraft to take supplies and equipment to the orbiting Salyut-7 space station.

**Paris killing**

A man was killed and two wounded when a gunman opened fire at a Tunisian restaurant in Paris. Elsewhere in the city three petrol bombs were thrown at offices.

**Peace women fined**

Twelve women from six West European countries who obstructed building work at a cruise nuclear missile base in Sicily were fined £500,000 (\$300) each. The prosecutor asked for light penalties because they acted from "motives of high moral and social value." Their 20-day jail sentences were commuted.

**South Africa's poor**

A South African study into poverty in rural areas, including the 10 best homelands, showed widespread hunger and deprivation. A third of black, coloured and Asian children under 14 were stunted by malnutrition, it said.

**Lawyers' protest**

More than 15,000 Bangladeshi lawyers boycotted the courts to press for a quick end to military rule.

**Frankfurt protest**

Riot police used water cannon against hundreds of young people protesting against the opening of a new runway at Frankfurt airport. Page 2

**Philippines fast**

Filipino opposition leader Butz Aquino, a former cabinet minister, and 25 others launched a week's fast to win support for the campaign to end the rule of President Ferdinand Marcos.

**BUSINESS**

**EEC will act on Japanese bearings**

EEC is to launch an inquiry into allegations of dumping of Japanese ball-bearings after pressure from European producers. Page 4

PHILIPPINES has imposed an additional 3 per cent duty, above the present 5 per cent, on non-exempt imports. Page 4

BELGIAN franc slipped outside its divergence limit in the European Monetary System last week, but was not under any real pressure.

This was underlined by two reductions in short-term interest rates by the central bank. Interest rates were virtually the same from

## Moynihan quits committee over Reagan's Nicaragua policy

BY REGINALD DALE IN WASHINGTON AND TIM COONE IN MANAGUA

PRESIDENT Ronald Reagan strongly defended his controversial Central American policies at the weekend by launching one of his sharpest attacks so far on the Sandinista Government of Nicaragua.

After accusing Nicaragua of "covert aggression" against El Salvador and its other neighbours, Mr Reagan said that the U.S. could not turn its back on "this crisis at our doorstep."

Mr Reagan spoke as controversy over the U.S.'s own covert activity against Nicaragua, including American-supervised mining of the country's ports, continued to reverberate through Washington.

Democratic Senator Daniel Patrick Moynihan of New York yesterday announced his resignation as vice-chairman of the Senate Intelligence Committee, accusing the administration of a "violation of trust" for not informing the committee about the mining operations.

In Nicaragua the key town of San Juan del Norte in the south-east was reported to have fallen to U.S.-backed right-wing guerrillas of the Revolutionary Democratic Alliance (Arde), who are fighting to overthrow the left-wing Sandinista Government.

Arde, based in Costa Rica, claimed that the town and garrison had been taken last Thursday after bitter fighting, including hand-to-hand combat, in which some 1,500 guerrillas had taken part.

It would be the first time that the U.S.-backed guerrillas had succeeded in taking such a key military target in more than two years of fighting.

Its capture would be a boost for President Reagan in his attempts to persuade Congress to approve a further \$21m in military aid for the Nicaraguan counter-revolutionaries.

After Senator Moynihan announced his resignation from the committee, other Republican and Democratic members insisted that they had known of the mining of the ports some time ago.

Mr William Casey, director of the Central Intelligence Agency, was reported to have told the committee five weeks ago, although only in a

single sentence of a two-hour briefing.

Senator Edward Kennedy of Massachusetts, one of Mr Reagan's leading opponents on Central America, denounced the mining as "illegal, immoral and ineffective."

Mrs Jeane Kirkpatrick, the U.S. ambassador to the United Nations, retorted that the mining was both legal and justified and that to cast Nicaragua in the role of victim was a "complete, Orwellian inversion" of the facts.

Mrs Kirkpatrick warned that if the U.S. did not take "prudent measures" to help Central American countries defend themselves, it could face a major threat to its own security in three to five years that would require the commitment of U.S. combat forces. The "biggest threat" could come from Soviet deployment of nuclear and chemical weapons in the region, she said.

In his weekly paid radio broadcast, Mr Reagan did not refer directly to the U.S.'s own covert campaign against Nicaragua, including the mining of the ports, which caused an outcry in Congress last week.

His administration was still hoping that the Sandinistas "can be brought back from the brink peacefully through negotiations," he said. He added, however, that given the Sandinista Government's record of repression, we should not wonder that the opposition, denied other means of expression, has taken up arms.

The main thrust of Mr Reagan's remarks was clearly to justify his decision late on Friday night to rush urgent military aid to the U.S.-backed Government of El Salvador, without waiting for full congressional approval. Congress adjourned for the 10-day Easter recess on Friday without action in the House of Representatives on Mr Reagan's request for an emergency \$62m in military aid for the hard-pressed government forces.

Mr Reagan invoked emergency procedures under the Arms Export Control Act.

Salvador arms adequate, Page 20

## IMF to get delayed \$6bn loan after Saudi deal

BY STEWART FLEMING AND MAX WILKINSON IN WASHINGTON

A LOAN of \$6bn that the International Monetary Fund said it urgently needed last summer to support assistance packages promised to Third World countries appears at last set to go ahead.

The loan had been delayed by demands from Saudi Arabia that its \$3bn share should be backed by gold. The other \$3bn is being provided by European countries and Japan.

Months have been spent in difficult negotiations over the package, and the Fund appears to have been embarrassed by the delay. Now, however, the Saudis are believed to have accepted a complicated legal guarantee, thus overcoming the impediment.

In the final communications from the Fund's interim committee meeting in Washington last week, ministers noted that the \$6bn loan was "in the process of being concluded with the Fund."

Officials and central bankers said the delays reflected the Saudis' traditional caution in financial affairs as well as the IMF's great difficulties recently in obtaining the support it needed from the U.S.

The U.S. has not taken part in the most recent loan, and last autumn Congress threatened to punish the IMF into a crisis by failing to ratify the U.S. share of a general increase in quota subscriptions.

Although that increase has since been approved by Congress, the Fund is in some doubt how it will meet its financing needs in a year's time.

## Mauroy to confront Communist partners

By David Housego in Paris

M PIERRE MAUROY, the French Prime Minister, said last night that the Communists within the ruling coalition were to be asked for a "clarification" of their position towards the Government's policies.

Speaking in a radio interview, M Mauroy gave the impression that the Government intended to force the Communists to choose between loyalty to the coalition or taking the responsibility for a split. He said that he wanted the Communists to remain in the Government but that he could not accept their "systematic calling into question" of government policy.

M Mauroy said that there was a lack of coherence in the Communists being members of the Government while at the same time espousing themselves from it in a way that undermined its policy. He said that he and President Francois Mitterrand were taking the appropriate decisions after hearing the Communists' response.

The latest gesture by the Communists that has angered the Government was the unexpected decision by M George Marchais, the party's secretary-general, to take part in Friday's march by steelworkers in protest at the fresh round of closures in the industry.

This followed the clear warning by President Mitterrand at his press conference the week before that "the time has come to put things clearly."

The Communists have increasingly dissociated themselves from the Government's policies while continuing to participate in the benefits of power. The Communist Party leadership itself has seemed divided on the overall value of remaining in the Government. They have begun preparing their campaign for the European elections in June.

M Mauroy's warning came during a weekend when the Communist-led CGT union federation, after campaigning against job losses in the steel sector, was preparing to shift the battle to the car industry.

It has promised a "tough" reaction to the announcement by Citroen that it would proceed with plans for making 2,837 employees redundant as part of a reduction in its workforce by 6,000. Citroen, which is part of the Peugeot group, wants to reduce its 45,000 labour force as a result of accumulated losses of FF 3bn (\$375m) over the last three years.

The CGT has called for a workers' meeting today to decide on action. On Friday, when Citroen confirmed the job losses to a central works council meeting, the union brought production virtually to a halt at the company's Almy-sons-Buis plant on the outskirts of Paris. A CGT official said that the response would be as "tough" as in 1982 - a reference to the bitter strikes in Citroen's Paris-based plants that year.

## British coal strike 'may force more pit closures'

BY DAVID BRINDLE, JOHN LLOYD AND IVOR OWEN IN LONDON

A PROLONGED national miners' strike in Britain would damage many pits beyond repair and their closure would make compulsory redundancies inevitable, Mr Ian MacGregor, chairman of the National Coal Board (NCB), said yesterday.

He said it was "entirely possible" that one in four of the board's mines would be lost if a strike over pay and pit closures continued until the autumn.

Mr MacGregor again made it clear that he had no intention of being deflected from his plans for the closure of 20 pits with the loss of about 20,000 jobs. He said: "There will be no change in the ultimate objectives here."

Asked if, in view of the likely damage of a lengthy strike, he would still say it was worth holding out, he replied: "Yes, I do say that."

Asked in an independent television interview if he would support the Government stepping in to move coal to power stations in the event of a lengthy stoppage which had the support of rail unions, he replied: "I would think it makes sense to make use of all the stocks that are available."

Mr Arthur Scargill, leader of the National Union of Mineworkers (NUM), interpreted this as Mr MacGregor's backing for the use of troops. He again accused the NCB chairman of "bully boy tactics" and said they would only strengthen the resolve of the miners.

Speculation over the Government's role in the dispute was heightened at the weekend by reports that Lord Trefgarne, a Defence Minister, would join today's meeting of the "inner cabinet" which has been monitoring the strikes.

Trades Union Congress for assistance.

The executive council of the National Union of Public Employees decided at the weekend to authorise donations of up to £50,000 from national funds for the NUM, and to consider further help in future weeks.

Overwhelming evidence, both anecdotal and from polls, now suggests that the NUM leadership would get backing for a national strike call and a reasonable majority on a strike vote.

The Government is braced for the likelihood of a national strike being launched after a special NUM delegate conference in Sheffield on Thursday.

Most observers expect the NUM leaders to win the support of the union as a whole which has so far eluded them - expectations backed up by the results published at the weekend of two polls of miners.

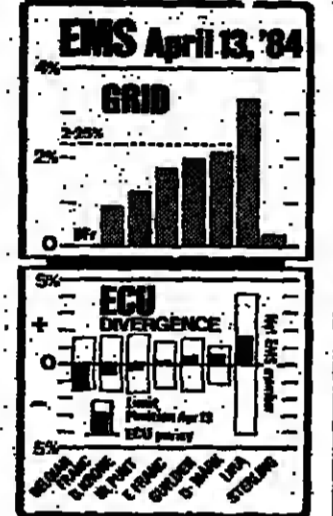
One, conducted by the Harris Research Centre for Independent Television, showed that 55 per cent of miners sampled would vote for a national strike if a ballot was called. Some 33 per cent said they would vote against and 12 per cent were undecided.

The second poll, carried out by Market and Opinion Research International for the Sunday Times, had 68 per cent favouring a strike with 26 per cent against and 6 per cent undecided.

The Harris survey showed that 58 per cent of those questioned were in favour of the proposed change in NUM rules on strike ballots. The change, to be considered by Thursday's conference, would reduce from 55 per cent to 50 per cent plus



Mr Arthur Scargill



a month to a year, reflecting the lack of any clear trend in the market.

The D-Mark was virtually unchanged in relation to its central rate and against the dollar. Consequently movements within the system were confined to a narrow range.

The chart shows the two constraints on European Monetary System exchange rates. The upper grid, based on the weakest currency in the system, defines the cross rates from which no currency (except the lira) may move more than 2% per cent. The lower chart gives each currency's divergence from the "central rate" against the European Currency Unit (ECU), itself a basket of European currencies.

Background, Page 2

## Debt ruling may affect UK banks

BY DAVID LASCELLES IN LONDON

THE Bank of England is telling British banks that they may not be allowed to count as capital large provisions made recently against bad Third World debts.

If the British central bank makes a firm ruling on this rather technical but controversial matter - and the indications are that it will - it could affect banks' capital ratios, the key measures of their strength.

Banks make two kinds of provisions: specific ones to cover known bad debts, and general ones as a precaution against loss when times are bad. British banks have responded to the Third World debt problem by sharply increasing general provisions over the last two years.

General provisions come out of after-tax earnings, so they take a slice off profits. But banks are allowed to include them as part of their capital because they play the same role as capital, which is to be generally available to meet bank losses.

But the Bank of England main-

Background, Page 2

Continued on Page 20

Continued on Page 20

Continued on Page 20

Continued on Page 20

LAND NOW... THE GOOD NEWS... SUCCESS YOU CAN SEE!

Ever thought of moving your business? To relocate, expand or simply survive? But where do you go? So many hopes and dreams on offer. So many brave new tomorrows. All you need is faith! In Northampton it's the here and now that matters! Success measured in results! See and believe it!

Eleven days isn't long. Less than a fortnight. But since 1970 Northampton has added one new firm, 45 jobs, 48 new homes, 65 people, 6250 sq ft of shops and offices and 22000 sq ft of brand new factories - every eleven days!

And more good news. Nearly 70 overseas firms from 15 countries have moved to Northampton, bringing new investment

and making this one of the UK's fastest growth points.

And no wonder. Distribution is no problem when your operating base is on the key stretch of the national motorway system. Right on the M1, midway between London and Birmingham. 50% of Britain's industry and 37% of its population is within 100 mile radius.

And the future? Better still. Continued growth, bigger markets, improved productivity.

So forget hopes and dreams. Look at the reality of success in Northampton here and now, today. Look at proven growth, proven achievement! Success you can see! Factories from 3400 sq ft to 29000 sq ft. Rent free periods negotiable.

Send for your free information pack.

**NORTHAMPTON**  
FREEPHONE 4633 Lyndsey Claburn  
Northampton Development Corporation, 2-3 Market Square, Northampton NN1 2EN

**CONTENTS**

International ..... 2, 3, 5  
Companies ..... 22  
World Trade ..... 4  
Britain ..... 6, 8-10, 12  
Companies ..... 24

Appointments ..... 22  
Arts - Reviews ..... 17  
Construction contracts ..... 33  
Crossword ..... 34  
Currencies ..... 38  
Editorial comment ..... 18

Eurobonds ..... 21, 22  
Financial Futures ..... 21, 22  
Ins. Capital Markets ..... 19  
Letters ..... 19  
Lex ..... 20  
Lombard ..... 19  
Management ..... 18  
Men and Matters ..... 26  
Money Markets ..... 18  
Statistical Trends ..... 5  
Stock markets - Bonuses ..... 28  
Stock markets - Wall St ..... 28-33  
Stock markets - London ..... 36, 37  
Technology ..... 15  
Unit Trusts ..... 34, 35  
Weather ..... 29

British farming: first turn of the Brussels screw ..... 18

European defence: 1954 comes around again ..... 19

Technology: rustproof care by robots ..... 15

Editorial comment: the two Germanys; UK jobs ..... 18

Lombard: the Donald Duck tax effect ..... 19

Lex: making a market for equity ..... 20

Desk-top revolution: Survey ..... Section III

Spanish banking and finance: Survey ..... Section IV



# OVERSEAS NEWS

### Max Wilkinson and Stewart Fleming assess last week's Interim Committee meeting in Washington

## 'Don't cry for Argentina—theme for a sombre IMF'

THE RECURRING theme behind the meetings of the International Monetary Fund which ended in Washington this weekend was: "Don't cry for Argentina."

The theme may have been muffled in the formal speeches and the bland tones of communiqué-speak. Nevertheless Argentina's \$500m debt rescue package, scrambled together by the U.S. and four Latin American countries a fortnight ago set a sombre note for much of the more important private discussions.

As one senior minister put it: "There is a danger that if the rescue deal might be read as a softening of the very firm attitude which the international community has taken to debt problems so far... I think there is a risk that a debtor's cartel might be formed."

These fears, shared in different degrees by most of the major European countries centre on the question of whether the Fund will now be under pressure to patch together a watered down set of economic reforms as the condition for its own assistance to Argentina.

A deal with the Fund would be the "seal of approval" for a more general rescheduling of Argentina's \$43.6bn of foreign debts. The pressure for the Fund to reach a rapid agreement is undoubtedly strong, since U.S.

banks would have to declare their loans to Argentina non-performing if the country should fail to meet the next deadline for interest payments on June 30.

Last week ministers were worried that the U.S. backed rescue may have appeared to set a precedent for bailing out debtor countries before they have agreed a strict programme of economic reforms with the Fund.

These fears arose partly because the Fund did seem to have given at least some implicit backing to the \$500m rescue to enable Argentina to meet its last debt servicing deadline on March 30.

This came in the form of a progress report by Fund officials on their negotiations with Argentina, suggesting, in the words of one delegate, that "all may be well." It was a sufficient signal for the U.S. to go ahead with its part in guaranteeing a \$300m loan from other Latin American countries.

This tough position appears to have been endorsed by the major industrial countries and it seems that the U.S. has been given a covert warning to move cautiously in protecting its commercial banks' profits in future—election or no election. In the ultimate case of a financial shoot-out between debtors and creditors—which most delegates seem to think unlikely—the developed countries apparently feel that

American countries in the \$500m loan was seen as evidence that the Fund's strategy is working to promote mutual self-help among debtors rather than a cartel against creditors. Mr Jacques de Larosière, the IMF's managing director, said he regarded this development as "very important indeed" because it showed that "countries in a region with debt problems have arrived at the conclusion that it is better to

when 700 banks were persuaded to provide \$6.5bn.

Mr Karl Otto Poehl, president of the West German Bundesbank, said: "The commercial banks must set about rescheduling, not from year to year, from quarter to quarter or month to month. They have to think about longer term solutions." The Fund, nevertheless, seems still to favour the relatively short-term "case by case" approach. In essence, it believes that nothing can concentrate the minds of debtor nations so wonderfully as the perception that they are accelerating towards a cliff edge.

On this view, the periodic bouts of vertigo suffered by the financial institutions are a price that must be paid for giving the Fund a continuing opportunity to enforce and monitor reforms in the debtor countries.

However, the Fund has argued that the amount of "new money" which the commercial banks will have to provide should now decline steadily year by year and this should encourage the commercial banks to stay in the ring.

In its latest economic outlook, discussed by ministers last week, the Fund suggests that the ratio of external debt to exports for the major debtor countries might decline from 194 per cent last year to 168 per cent in 1987 and to 150 per cent

### Ministers were worried that the U.S.-backed rescue might have appeared to set a precedent for bailing out debtor countries before they have agreed a strict programme of economic reforms with the Fund.

further delays in payments by Argentina might be a lesser evil than a sign of weakening by the Fund.

As one very senior banker put it: "In that case, we could only look the Argentinians in the face and say, 'I am sorry, we cannot agree. We are aware of the consequences.'"

Although there is an element of shadow boxing in all this, as there was in the run-up to the Fund's agreements with Mexico and Brazil, ministers did seem to feel the need last week for some sort of strengthening of resolve.

However, the involvement of Mexico, Brazil and other Latin

get together and try to solve their problems."

He added the caution: "This does not mean that this immediate action is the end of the story..."

The "Argentina Question" also highlighted a more general dilemma for the Fund: whether it should continue to stagger from one debt rescheduling crisis to the next or use its influence to promote a longer-term restructuring of debt by stretching out maturities.

One European central banker said he was anxious that the Fund might have difficulty in organising rescues on the scale of last year's help for Brazil

## Protests continue for third day over Frankfurt runway

FRANKFURT—Demonstrators and riot police clashed yesterday for the third day at Frankfurt airport's controversial new runway, as about 150 youths tried to ram a concrete wall surrounding the runway, set slight petrol canisters and brushwood piled against the wall and threw flares at riot squads. Police used water cannon to extinguish the fires and then turned them on the demonstrators.

Police said between 250 and 300 turned up at the airport, the second busiest in Europe after London's Heathrow. On Saturday, 20 police officers and several demonstrators were injured when protesters threw ball-bearings and petrol bombs at riot squads. Organisers said an estimated 10,000 people took part in the action, which resulted in the arrest of 13 demonstrators.

Earlier as the protesters walked yesterday in bright sunshine along the barbed wire-topped concrete wall bordering the runway, light security was in evidence. Water cannon were positioned inside the barrier while mounted police and foot patrols were outside.

As the demonstrators mingled with a few amateur plane spotters and families on Sunday outings, the only sign of the earlier protest were tattered balloons, released in an unsuccessful attempt to disrupt air traffic, and the smell of tear gas in nearby woods.

The protests are the latest in 28 years of court battles and sometimes violent demonstrations against the runway, built at a cost of DM 25m (\$88.5m) including two DM 20m for the wall, police watch-towers and other security measures.

Some 1,000 detentions have been made since plans for the project were first proposed in the mid-1960s. The names of those detained yesterday have not been released.

Opponents of the runway say it will damage nearby woods and increase aircraft noise in villages on the flightpath. Airport authorities say the new runway, used only for takeoffs, is needed to relieve pressure at peak periods.

## French inquiry over stray Soviet aircraft

TOULON—French military authorities have begun an inquiry into a flight by a Soviet civilian airplane over a secret French naval base.

An Aeroflot Tupolev 134 entered prohibited airspace over the Toulon naval base on Friday, and apparently ignored several warnings from civilian air traffic controllers that it had diverted from its approved flight path into a restricted area, which contained France's first nuclear attack submarine Rubis and the aircraft carrier Foch, both of which were in dock.

The aircraft apparently went off course shortly after being given permission to begin its descent towards Marseilles and then made

three slight adjustments which brought it directly over the naval base, before landing 20 minutes later.

There have been similar incidents involving Aeroflot planes in the past, notably during test firings of missiles from a French military base on the island of Levant off Toulon.

It is thought unlikely that the Soviet pilot was on a spying mission since he knew his aircraft would probably be searched by French authorities on arrival. The more likely explanation is that he wanted to test France's military reaction to such an incursion and to monitor its defence radar frequencies.

## Hart wins Democratic caucuses in Arizona

BY REGINALD DALE, U.S. EDITOR, IN WASHINGTON

SENATOR—Gary Hart won the weekend's Democratic caucuses in Arizona, raising his hopes of winning his shaggy presidential campaign in the West.

Mr Hart won 45 per cent of the vote against 40 per cent for his main rival, former Vice-President Walter Mondale.

The vote translated into 17 delegates for Mr Hart at July's 8,853-member national convention in San Francisco against 15 for Mr Mondale and one for the third remaining candidate, the Rev Jesse Jackson.

Mr Mondale's campaign staff conceded that Senator Hart, who comes from Colorado, was

clearly well-placed to win western votes but added that he had spent much more than Mr Mondale in Arizona.

Mr Hart won his first clear-cut victory in the battle for delegates in his native state of South Carolina, where the state Democratic convention gave him 94.4 per cent support.

A number of uncommitted delegates elected earlier in the state primary switched to Mr Hart to give him a delegate count of 17. Fourteen South Carolina delegates remained uncommitted with seven for Mondale.

## Texas scraps evolution rule for textbooks

DALEAS—The Texas Board of Education has voted to cancel a rule that restricted mention of the theory of evolution in state-approved textbooks.

The board, meeting in El Paso, voted after Mr Jim Mattox, Texas Attorney-General, told board members that the 10-year-old rule was unconstitutional.

The rule required science textbooks to identify Charles Darwin's theory of evolution as only one of several explanations of the origins of humankind.

The rule also required that evolution be mentioned about in the textbooks "in a manner not detrimental to other theories of origin."

But in striking down the rule, the 27-member board also approved a new regulation to appease Creationists who believe in the Biblical story of the origin of humankind, and want their beliefs included in state-approved school books.

The rule also required that ridiculous position, and we had to eliminate it," Mr Will Dantz, a board member said.

Mr Davis and another board member, Mrs Virginia Curry, sought to overturn the old rule, to encourage textbook publishers who had avoided a full discussion of evolution and other Creation theories.

"I hope the textbook publishers will get the message they have nothing to worry about," Mrs Curry said.

Textbook approval to overturn the evolution rule was granted on Friday in a 23-2 vote. The board formally approved the resolution in a verbal vote on Saturday.

FINANCIAL TIMES, USPS No 10090 published daily except Sundays and holidays. U.S. subscription rate \$420.00 per annum. Second class postage paid at New York NY and at additional mailing offices. POSTMASTER: send address changes to FINANCIAL TIMES, 14 East 60th Street, New York, NY 10022.

Simply put your finger on the screen of the HP 150 Touchscreen personal computer

to edit your novel;

prepare the budget;

check stock;

make a statement;

shape the future;

make a pic;

consult the index;

find an address.

Get in touch.

Try talking like this to any other personal computer. The Hewlett-Packard 150 Touchscreen professional computer also has a keyboard.

Just like any ordinary personal computer. And a price tag in the same bracket. Call 01-935 4424, or fill in the coupon for your information pack.

FT16/4/84

Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

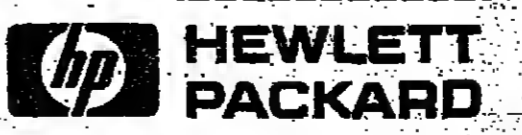
Address \_\_\_\_\_

Postcode \_\_\_\_\_

Telephone \_\_\_\_\_ Ext. \_\_\_\_\_

To: Enquiry Section, Personal Computers, Hewlett-Packard Ltd, Esdside Road, Wokingham, Berkshire RG11 5DZ.

HP 150 at a Glance. User Memory: 256K-640K bytes. Operating System: MS-DOS 2.11. Microprocessor: 16-bit Intel 8088. RAM: Permanent Memory: (ROM) 160K bytes. Diagnostics: Power-on self-testing. Display Screen: Touch activated, green phosphor, 80 characters x 27 lines, 9 x 14 dot character matrix. Upper and lower case. Simultaneous text and graphics capability. 390 x 512 graphics resolution. 1024 characters and symbols in ROM. Keyboard: 107 keys (total), 8-ft cord attaches to system unit. 10-key numeric pad. 12 function keys (8 screen labeled). CompactDisc: 2.1 sq. ft. 80K space. Communications: 2 RS-232 ports. HP-B (IEEE-488) Built-in. Up to 19,200 bits per second DSN network link. Peripherals: Choice of printers (including optional internal printer), plotters, 3.5" floppy drives (256K bytes formatted), Winchester hard discs (5 and 15 Mbytes).



THIS COULD BE THE BEST DEAL YOU SIGN ON YOUR NEXT BUSINESS TRIP.

It's all the details that make Sheraton Towers unique. Everything's there from the comfort of a luxurious, oversized room to the convenience of secretarial services.

Call our London office at 01-636.64.11 for reservations.

It's a deal too good to miss. Sheraton Towers. Brussels Sheraton Hotel & Place Rogier, 3. 1000 BRUSSELS, BELGIUM.

Spit in it



OVERSEAS NEWS

Sikh extremists set fire to 30 railway stations in Punjab

BY K. K. SHARMA IN NEW DELHI

AT LEAST 30 railway stations in the north-western Indian border state of Punjab were set on fire soon after midnight yesterday, adding a new and ominous dimension to the two-year-old agitation by Sikhs for religious and political autonomy. Although no casualties were reported, the arson was thought to have been caused by Sikh terrorists in an attempt to escalate the tension at a time when the Sikh leadership appears to be sharply divided. The Indian Government, which has taken direct control of the administration in Punjab, views the latest developments very seriously. Additional railway protection security forces were hastily despatched yesterday to help the state authorities. More attacks on the railways are feared since the terrorists have acted in a planned and co-ordinated manner all over the Punjab. The arson in all 30 stations followed a similar pattern. An unsuccessful attempt was also made to derail a train.

Pledge on Tamils conflict

BY OUR NEW DELHI CORRESPONDENT

SRI LANKA'S Minister for National Security, Mr Lalith Athulathudall, said here yesterday his government was committed to finding a political solution to the ethnic conflict in his country. Mr Athulathudall is in New Delhi to explain the Tamil situation in Sri Lanka where nearly 40 Tamil "terrorists" were killed by security forces last week in and around Jaffna in the north where the Tamil population is concentrated. The clashes followed the collapse of negotiations between the Government and Tamil representatives on the latter's demand for autonomy. The negotiations were held with the help of the Indian Government. Mr Athulathudall arrived in New Delhi on Friday for talks with Indian ministers following fears among Indian Tamils that the Sri Lanka Government had decided to crack down on "terrorists" and had given up hopes of finding a solution through negotiations.

Kampuchea base overrun

BANGKOK—Tank-backed Vietnamese troops yesterday won control of an important base of the Khmer Peoples' National Liberation Front near that Kampuchean border, according to Thai military officials. They said that 50 civilians had been killed and many more wounded, including 35 who they said had suffered skin burns from poison gas. Earlier Pransong Soonsiri, secretary-general of Thailand's National Security Council, said the Vietnamese attack had forced thousands of Kampuchean refugees across the border into the Thai province of Aranyaprathet. The Thai military said there was still sporadic fighting between the guerrillas and Vietnamese troops. About 2,000 Vietnamese troops took part in the fighting, they said.

Spain jails 3 colonels over coup plot

By David White in Madrid

THREE of the army colonels accused of plotting a pre-election coup d'etat in Spain in 1982 received statutory 12-year prison sentences yesterday after a five-day court martial. But the military tribunal called on the Government to commute the sentences to four years. The fourth defendant was acquitted. The three convicted artillery officers, Col Luis Muro, Col Jesus Crespo Caspimera, and Lt/Col Jose Enrique Crespo Caspimera, who were all found guilty of conspiracy to rebel, are to appeal to the Supreme Military Court. The sentence of 12 years and a day is the minimum laid down for military convictions. The court said there was no proof that the fourth man, Infantry Lt/Col Juan Fernandez Hidalgo, participated in the plot. Sr Eduardo Sotillos, chief Government spokesman, said no official statement would be made on the sentence. However, it is bound to revive debate about the capacity of military courts to deal resolutely with cases of this kind.

This debate came to a head two years ago with a public scandal over the sentences initially handed down against the leaders of the spectacular coup attempt of February 1981. The sentences were subsequently increased. The five-man military tribunal said the 12-year minimum sentence, which was introduced after the 1981 revolt was "excessive" in the circumstances. The sentences imply automatic dismissal from the army although the men stand to receive 80 per cent of their pay. The court said the three men had agreed on a blueprint plan for the violent overthrow of Spain's political system and installation of a military regime, under which regions would be disbanded, regional autonomy statutes cancelled, and news media placed under control. The defendants maintained that their plans were simply a "theoretical tactical exercise."

Hopes fade for Lebanon disengagement plan

BY NORA BOUSTANY IN BEIRUT

A DISENGAGEMENT plan to separate the warring Lebanese militias and hopes of a Syrian-Lebanese summit appeared to be shattered yesterday following a weekend of untempered violence and no progress on the political front.

On Saturday haphazard shelling of residential areas by gunners in Christian East and Moslem West Beirut left 20 people dead and many more wounded.

The President's living quarters at the Baabda Presidential palace received direct hits. There was extensive material damage but no one was hurt.

Meanwhile, only 1,250 men signed up for a badly needed disengagement force composed of Lebanese gendarmes and retired army officers to act as a buffer separating the fighters. The plan had required 2,000.

Officials and politicians' efforts to deploy a police force as a buffer between Christian militias and the Lebanese Army on the one hand and Moslem and Druze fighters on the other had also yielded no concrete results by the week's end.

Lebanese Christians did not celebrate Palm Sunday yesterday with the usual outdoor pro-

cessions under instructions from their church leaders apprehensive of continued shelling. April showers, discouraged the habitual outbursts of artillery duels, early in the day, but the relative calm was shattered in the late afternoon when several shells slammed into East Beirut and other Christian areas.

As security conditions deteriorated, several Moslem opposition leaders declared they favored the return of a Syrian deterrent force to help pacify Beirut.

There were no clear signals from Damascus that wishes for a Syrian peacekeeping force

would be granted. However several travellers reaching Lebanon by land from Syria over the past two days said they saw Syrian trucks and armoured personnel carriers painted white with "Peace-keeping forces" written on the side.

Analysts here discounted the importance of such preparations saying Syria would not embark on such a move without the necessary regional political cover.

Israeli Defence Minister Moshe Arens called for a separation of Syrian and Israeli forces in Lebanon on Saturday saying that international peace-keeping

troops should be deployed in eastern Lebanon's Bekaa Valley. Renter reports from Tel Aviv. His statement seemed to indicate a change in Israel's policy of refusing to move from its Bekaa defence line, from which Damascus (23 km away) is in range of Israeli guns.

The Shi'ite Amal movement yesterday released an American professor and a French citizen who were kidnapped mainly Moslem West Beirut last February. Prof Frank Regier is an engineering instructor at the American University of Beirut and M Christian Jobert worked for a French company in the city.

BP likely to bid for more China oil leases

By Mark Baker in Peking

BRITISH Petroleum has indicated that it is likely to bid for additional Chinese offshore oil exploration leases, and it has reaffirmed its confidence in the potential of its existing lease blocks.

Mr Mike Yeldham, an assistant general manager of BP Petroleum Development in Canton, has rejected reports suggesting BP is concerned about the poor results of its drilling so far in the South China Sea.

China announced last week that a second round of bidding would begin soon and the "model contract" on which bids are made was being revised.

Of three wells drilled since last November, by the BP-led consortium, one had very little oil flow and two have been dry. Work on a fourth well has been proceeding for about a month. Mr Yeldham said the consortium's drilling plans were proceeding normally and work was expected to begin next week on the first well, which contained oil, in its lease area in the South Yellow Sea.

After three wells there is no way that anyone can draw conclusions, so we can't be pleased or disappointed. It would be extraordinary lucky if we hit oil in one of the first wells we drilled," he said.

Drillers for a joint venture involving China, the Royal Dutch-Shell group and Exxon have found evidence of crude oil in their first well in the South China Sea, reports AP-DP from Peking.

Mugabe denies church's claims of brutality in Matabeleland

BY OUR HARARE CORRESPONDENT

MR ROBERT MUGABE, Zimbabwe's Prime Minister, has denied allegations by the country's Roman Catholic leaders and international newspapers of security force brutality against the minority Ndebele people in Matabeleland Province at the weekend. He later accused the Roman Catholics of supporting the opposition party of Mr Joshua Nkomo.

The Prime Minister claimed the Roman Catholic church had decided to "counter successful Government activities" because they were directed against institutions of Joshua Nkomo which "have been sustaining more dissidents."

Mr Nkomo's Zapu party, which relies almost exclusively on the Matabele people for its support, denies any links with the anti-Government dissidents who have been waging a guerrilla campaign against the Mugabe Government.

Mr Mugabe, making his first visit to the troubled Matabeleland area for nine months, said his Government had been handed the church report, detailing atrocity allegations, on April 2.

The four-page report accuses the Mugabe Government not just of beatings and killings of civilians, but also of a deliberate policy of starvation. Soldiers had told villagers that they must first bring dissidents to the security forces before they could expect any food, the report says.

The Government relaxed its curfew restrictions in Matabeleland last week, saying that the security position had eased and yesterday, Zimbabwe's main weekly newspaper, which has not reported the church's allegations, quoted Mr Mugabe's assertion that the military situation was improving. The report claims that many villagers have been taken away for interrogation and not seen since, while others had been tortured by electric shock. One mission "had a list of 22 people killed by security forces in the past two months alone."

'Grave concern'

In their report the seven bishops say: "We wish to express our grave concern about the starving people in Matabeleland South arising from the continuing conditions of starvation, beatings of people, torture and killings."

The report accuses the army commanders of giving the impression that it is army policy to make all the people in the area suffer because of the dissidence and killings.

It calls for the lifting of the dawn-to-dusk curfew, that all rural roads be allowed to restock with foodstuffs, that the Government undertake a serious political dialogue with the minority opposition Zapu party, and that a government Minister tour the region with independent observers. Mr Mugabe's outright rejection of the report suggests there is little prospect of his adopting any of its recommendations. His own political morale was given a boost at the weekend with the announcement that Mr Callistus Ndllovu, Zapu Minister of Mines, had decided to desert Mr Nkomo and join the ruling Zanu-PF party.

This morale-booster is much needed on the eve of the fourth anniversary of Zimbabwe's independence, and at a time when the Prime Minister is being assailed by the minority political parties over his human rights performance and by farmers and business leaders over his management of the economy. Bishop Abel Muzorewa's United African National Council also attacked the Government at the weekend, issuing a sharply critical statement calling for the release of the bishop who has been detained without trial since October last year, and whose case has still not apparently been referred to the detainees review tribunal.

While Mr Ndllovu's defection is hardly a surprise—since he has made little secret of his disapproval of Mr Nkomo's leadership—there is speculation that other Zapu Ministers will follow his lead.

This is rejected by Nkomo loyalists who argue that it is these Zapu moderates who are trying to remain in the Mugabe Cabinet who are out of touch with grassroots party feeling in Matabeleland.

Allies in fresh protest over Berlin air curbs

By Leslie Collet in Berlin

THE THREE Western allies in West Berlin have protested to Moscow for the second time in recent weeks over continuing restrictions on allied flights in the three air corridors between the city and West Germany.

In a co-ordinated move, Britain, the U.S. and France told the Soviet Union of their concern over the limitations imposed on the altitudes at which allied aircraft fly in the air corridors to Berlin over East Germany which have been reserved for them since the end of World War II.

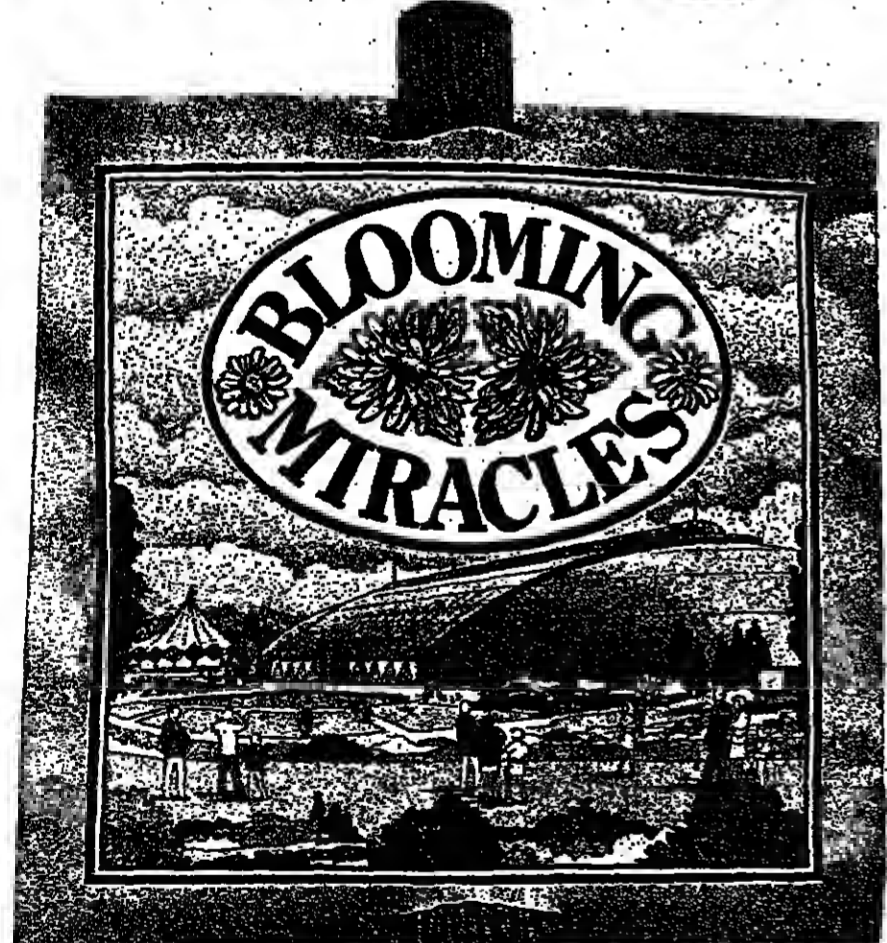
Mr Peter Boon, British spokesman in West Berlin, said the allies took up the matter with the Soviet ambassadors in their capitals late last week. He noted that they also voiced their displeasure to the Soviet officials in Berlin.

Last week Herr Eberhard Diepgen, West Berlin's governing mayor, said after talks in Washington with President Reagan and senior U.S. officials that they were "very concerned" about the restrictions.

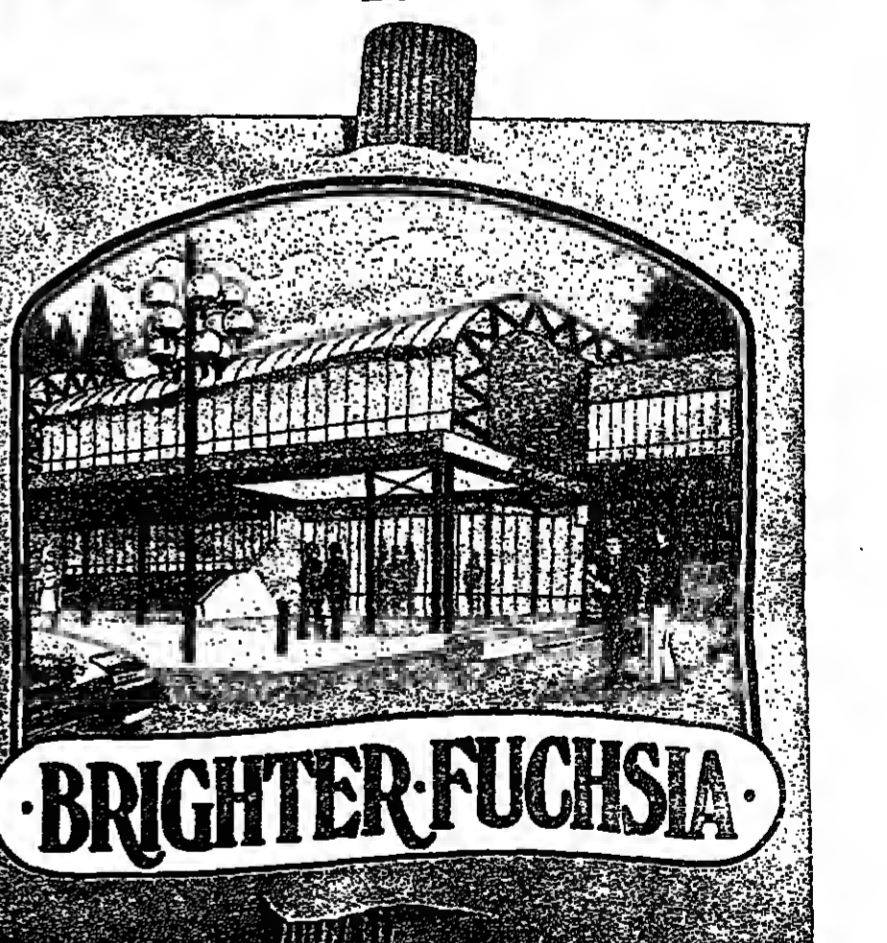
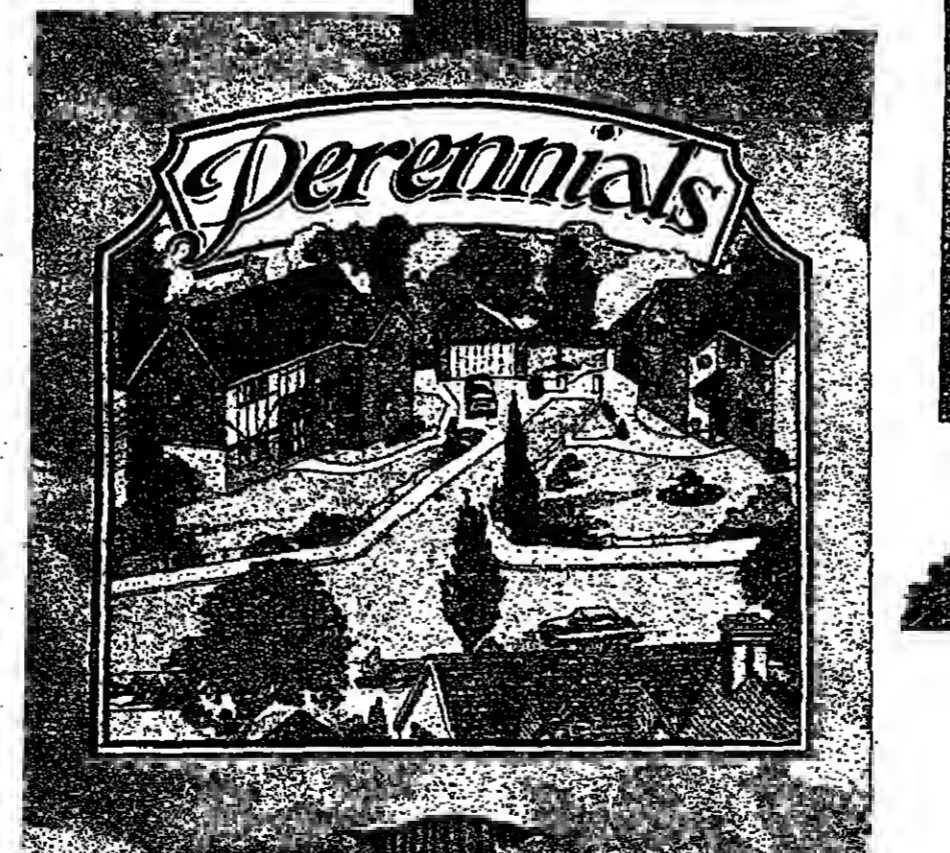
Mr Lawrence Eagleburger, U.S. Deputy Secretary of State, lodged the U.S. protest with the Soviet Ambassador, Mr Anatoli Dobrynin, on Thursday. Allied officials said the chief Soviet representative in the air safety centre in West Berlin informed his Western counterparts several times last week, "not because of Warsaw pact air manoeuvres in the air corridors, but because of the allied aircraft to fly at certain altitudes to avoid collisions."

What's growing on Merseyside

Soon after, the entire landscaped area will again be in bloom. New industry. New housing. New leisure facilities. For generations, Merseysiders will be reaping the benefits. And the seeds we've sown in other Dockland areas are now bearing fruit. Thirty nine new factory units at our Millers Bridge site. The new B.A.T. Enterprise Workshops at Brunswick Dock. The transformation that's taking place at Albert Dock—Britain's largest Grade 1 listed building which, after years of decay, will soon, once again, become a proud Liverpool landmark.



How, in just 2½ years, do you transform 250 acres of total devastation, oil tank farms and rubbish tip into a stunningly beautiful landscaped setting for Britain's first International Garden Festival? Many people said it would be a miracle if it ever happened. Come and see it for yourself after it opens in May. It's surprising what you can achieve when you plant a good idea on Merseyside. The Garden Festival will flower for just under 6 months. In October the gates will close. But that's not the end. It's just the start.



The future is bright for Merseyside. The changes taking place are visible. What's growing on Merseyside? Confidence. Find out for yourself.

Merseyside Development Corporation

TURNING THE TIDE ON MERSEYSIDE Contact Alex Anderson, Merseyside Development Corporation. Tel: 051-236 6090.



WORLD TRADE NEWS

EEC inquiry into Japan bearings 'dumping'

By Ivo Dawson in Brussels  
THE EEC is to launch an inquiry into allegations of dumping by Japanese ball bearing manufacturers after coming under intense pressure for action from Community producers.  
The investigation which is expected to be announced next week, follows two earlier EEC investigations of the market in the 1970s. These ended with negotiated settlements with the Japanese who agreed to regulate the pricing of their firm a year exports.  
Last month the European Commission imposed anti-dumping duties of up to 37.5 per cent on miniature ball bearings produced in Japan and Singapore. The new six month long inquiry, which will cover all bearings with diameters over 30 millimetres, begins a procedure that could end in similar action against imports.  
Latest Commission figures showed that Japanese manufacturers held 11.5 per cent of the total EEC market, rising to 14.4 per cent in the volume market, primarily the motor industry.  
The greatest penetration was found in West Germany and the UK where the Japanese market share had risen to about 16.5 per cent with prices averaging out at 20 per cent lower than their European competitors.  
The Federation of European Bearings Manufacturers Associations has pointed out to the Commission that EEC producers have cut their workforces by 9 per cent since 1979, but cannot compete with prices sometimes as much as 84 per cent below cost.  
The Commission is also expected to announce measures to monitor the sales of Japanese quartz watches to the EEC, after allegations that negotiated quotas are being exceeded.

David Hellier looks at some of the world's more prestigious export awards  
Star exporters vying to join the Oscars

EXPORTING can be a financially rewarding business, but it can also be the source of important awards given by major national institutions to those who are most successful at it.  
In the UK, the latest recipients of the Queen's Award to Exports will be announced on Saturday. About 90 companies receive the award each April — and there are usually nearly 10 times as many applicants as there are winners.  
Its prestige, not just within the UK but overseas as well, makes it a valuable bonus for exporters.  
Less well-known, perhaps, are the export award ceremonies held in other countries.  
The South Koreans, for example, who have little difficulty in exporting, hold an Export Day each November, in which the year's most prolific export companies receive miniature stainless steel towers from the President as a token of honour.  
Usually around 20 inches, depends on the company's export turnover during the previous year.  
Last year's tallest tower went to Hyundai one of South Korea's biggest conglomerates.

In the U.S., companies are given "E" awards, which comprise a flag with a big "E" (for export) inscribed on it and a scroll. About 50 firms, nominated by District Export Departments, receive the award annually.  
Mr Michael Mercurio, U.S. Commercial Attache in London, says of the "E" scheme: "It's a very nice thing for the companies involved, but in the overall scheme of things it does not have the same kind of visibility that you have for your awards here."  
In Sweden, the major competition, Exportlift is sponsored by the Swedish Trade Council and SAS, the national airline. It rewards just one company each year with prize money of around \$3,000 and guaranteed publicity in the Swedish Trade Council magazine. A second competition, the Swedish Export Championship, rewards personal export achievements. It is sponsored by Swedish banks and an association of Swedish companies. The competition winner is invited on a trip to the Far East.  
The French have their own Oscar ceremony for exporters (Oscar de l'exportation), held each December in Paris. Orga-

nised by the journal "Le nouvel economiste" and the French Trade Department, the Oscars are divided into 10 different categories.  
As for Japan, it is not exporters that receive awards but importers. In an attempt to show the rest of the world that they are trying, the Japanese introduced the importers' awards last June, when six companies were honoured by Mr Yasuhiro Nakasone, the Prime Minister. Among the winners were Jardine Matheson, the Hong Kong trading company, and Burroughs, and Procter and Gamble of the U.S.  
In addition to the six outright winners, 15 other companies were commended for their import achievements, and these included five non-Japanese businesses.  
Few countries, however, seem to have the same kind of prestige attached to their awards as the Queen's Award has in Britain.  
Mr David Royce, director general of the Institute of Export, thinks that the Royal honour still holds great weight across the world, especially in countries where the Crown's influence is strong.



David Royce: "A way of gaining prestige."  
"Certainly firms which have won awards are by no means backwards in coming forward and saying that they've won them."  
"They're a way of gaining prestige, and people know they're not handed out on a plate."  
"A measure of their value is

given by the kind of people who apply for them in a sector of the economy which is known to be one of the most efficient."  
But he did give a warning to those who constantly pump out the "export or die" message to British industry.  
"I think we must be balanced in our euphoria for exporting. Imports are also important, and certainly our standard of living would go down if these fell too dramatically."  
If the Japanese can reward their importers, what about the British?  
Mr Ray Skelton, secretary of the British Importers' Confederation, has long ago resigned himself to the inevitable. "I can't see anybody giving awards to importers," he said. "It gets a bit depressing at times, but I think that importers are doing a good job. However, we do aim to educate people so that they do not just think of the import-export business in black and white terms."  
"Some of our importers are probably amongst the most efficient businesses in the country. They provide the consumer with a wider range of products and at lower prices. The importer is not a ogre he appears to be."

Britain plans £275m Iraq credit line

BY CHRISTIAN TYLER, TRADE EDITOR  
MORGAN Grenfell, the London merchant bank, has secured the mandate for a £275m general line of credit that Britain is underwriting for Iraq.  
The credit, said to be the first of its kind for Iraq, is the result of an agreement by the Anglo-Iraqi Joint Trade Commission last autumn. According to the bank, the protocol signed then states that the loan cannot be used for the purchase of military equipment to help Iraq prosecute its long war with neighbouring Iran.  
Some £25m is earmarked for commodity purchases, the rest for civil projects in which British companies stand a fair chance of winning major orders.  
These projects include water and power supply and oil and gas development for which Iraq will be placing contracts for capital goods and services.  
The credit is guaranteed by the Export Credits Guarantee Department and is available for orders won before the end of this year.  
Morgan Grenfell said it had been appointed following its lead role in last year's credit-for-oil agreement to refinance construction contracts in which British firms were involved. Until recently, when the war began to take its toll, Iraq paid for most imports out of its substantial oil revenues.

Ankara company to build F16 assembly plant

BY DAVID BARCHARD IN ANKARA  
TURKEY's state aviation corporation, TUSAŞ, has awarded a contract for TL 50m (\$100m) to a consortium to build a F-16 assembly plant near Ankara for the assembly of F-16 fighters.  
The award of the contract is the first clear signal that the government is pressing ahead with its \$4.2bn deal with General Dynamics of the U.S. to assemble and co-manufacture the F-16.  
The new deal government is known to be privately less than keen on the "Tusase aviation" with General Dynamics made plant near Ankara for the assembly of F-16 fighters.  
TUSAŞ and General Dynamics last month set up a joint venture to handle the project, now known as the "Tusase aviation and space industry corporation".  
The deal has an initial capital of TL 250m (\$US 11m).

Trade keynote of Thatcher visit to Portugal

BY DIANA SMITH IN LISBON  
ANGLO-PORTUGUESE trade, which shifted in Portugal's favour last year, will be a keynote of Mrs Margaret Thatcher's official visit to Portugal from April 17 to 19.  
The first British prime minister to come to Portugal — Britain's oldest formal treaty ally — since 1910, Mrs Thatcher is likely to register the keen interest of British concerns in getting orders in areas where the Portuguese plan to invest

heavily: nuclear energy, telecommunications digital switching, computerisation in government and finance, coal-fired power stations, a gas pipeline which Portugal hopes one day to link to new European pipelines, and modernisation of Lisbon's antiquated, defective sewage.  
As Portugal's number one trading client fourth supplier of goods and commodities, Britain has fought to maintain its position

in recent years against increasingly-aggressive competition from France and West Germany.  
The restored competitiveness of the escudo after hefty 1983 devaluations and more energetic marketing by Portuguese textile manufacturers put trade with Britain into the black for Portugal for the first time in 1983. Then, exports to the UK, mainly textiles and clothing, footwear, lumber and wooden

furniture, cork, pulp and waste paper, beverages (including port wine), office machines and electric equipment, totalled \$476m, compared with \$380m in 1982 and \$333m in 1981. Last year Britain exported \$37m to Portugal compared with \$420m in 1982 — giving Portugal a trade surplus of \$79m.  
The main reason for the drop in British exports seems to have been decreased sales of vehicles and components.

Fresh Tokyo Australian beef talks

By Robert Cottrell in Tokyo  
AUSTRALIA and Japan plan more talks on bilateral beef trade starting May 10, following the failure of a preliminary round last week.  
The fresh round of talks was agreed over the weekend at a meeting in Tokyo between Mr Shinjiro Yamamura, Japan's Minister of Forestry and Fishing, and Mr John Kerin, Australia's primary industry minister, who arrived in Japan on Thursday.  
The talks with Australia follow the agreement reached between Japan and the U.S. last weekend to increase Japanese beef imports from the U.S. from 30,800 tonnes annually to 58,400 tonnes annually over the next four years. Australia is anxious to secure an undertaking from Japan that its own share of Japan's 141,000 tonne-per-year total beef imports is not reduced.

World Shipping Report Charter market edges up

FINANCIAL TIMES REPORTER  
FEW new charters have been reported this week, but the market has firmed up slightly as a number of transactions have been concluded on a confidential basis.  
Of these, the most reported, a 220,000 tonne vessel was taken to Taiwan from Ras Tanurah at Worldscale 27.75 while the premium for loadings from Iran is about 5 to 6.  
A fair volume has been completed out of West Africa. A motor tanker that has been 100,000 ton tanker was fixed to the Mediterranean at Worldscale 44.5 and a 138,000 ton vessel went at Worldscale 28 for the U.S.  
Rates have tended to drop for cross-Mediterranean and Mediterranean-Europe cargoes. Worldscale 50 being paid for one recent cargo to Europe.  
In the sale and purchase market, there was a flurry of interest in tankers, with one Greek owner purchasing three chartered tankers that have been laid up in Norway.

Manila moves to stem imports

By Enrilia Tagaza in Manila  
IN A move designed to cut Philippine imports to the "barest minimum," the Government has imposed an additional 3 per cent duty, above the present 5 per cent, on all non-exempt imports. Exempt imports include those of Government agencies or those organisations exempted under special laws.  
The additional duty is one of the conditions set by the International Monetary Fund (IMF), with which the Government is negotiating a \$600m standby credit.  
The IMF facility is crucial as it is expected to trigger the stalled negotiations with foreign creditors.

World Economic Indicators

	TRADE STATISTICS			
	Mar '84	Feb '84	Jan '84	Mar '83
Japan \$bn	Exports 13.95	13.73	13.42	11.63
	Imports 11.45	11.40	11.05	10.78
	Balance +2.50	+2.33	+2.37	+1.45
UK £bn	Exports Feb '84	Jan '84	Dec '83	Feb '83
	Imports 5.46	5.56	5.44	4.85
	Balance +0.57	-0.34	-0.36	+0.05
U.S. \$bn	Exports 17.21	18.33	17.30	16.31
	Imports 24.15	26.59	22.98	18.80
	Balance -6.94	-8.26	-5.68	-2.49
W. German DMbn	Exports 41.15	36.55	40.83	33.16
	Imports 36.38	34.62	34.73	29.42
	Balance +4.77	+1.93	+6.10	+3.74
France FFbn	Exports 62.80	64.29	67.44	62.77
	Imports 67.40	74.34	67.64	60.38
	Balance -4.60	-10.05	-0.20	-7.61
Italy Litn	Exports Dec '83	Nov '83	Oct '83	Dec '82
	Imports 10,071	10,488	10,781	6,700
	Balance -1,436	+278	-711	-830

# Dresdner Bank worldwide

- Total assets DM 160 billion
- Capital and reserves DM 4.5 billion
- Operating results exceed DM 2 billion
- Net income DM 380 million



The Dresdner Bank Group operates 1400 offices in more than 50 countries and employs a staff of 34 000.

# 1983

Worldwide Consolidated Accounts

Dresdner Bank

## Britain's answer to the Krugerrand

### THE NOBLE.

One troy ounce of solid Platinum  
— at little more than bullion price

**BY ROYAL ASSENT** Britain's late Majesty Queen Elizabeth II has issued a new legal tender British Gold coin to rival South Africa's Krugerrand as today's most attractive investment in precious metals. Mined from one troy ounce of 99.95 Fine Platinum, the new Noble is internationally recognised as a true Bullion Coin, and is priced, at little more than the daily rate fixed by the London Platinum Quotation, Ayrton Metals Ltd, and other authorised distributors, apply a minting and handling premium comparable to those applied to Krugerrands.

Not surprisingly, the new Noble is already an outstanding success in Europe, where leading Swiss financial advisers have long been advocating that a minimum of ten percent of capital be put into tangible, tradable bullion assets. The daily rate fixed by the London Platinum Quotation, Ayrton Metals Ltd, and other authorised distributors, apply a minting and handling premium comparable to those applied to Krugerrands.

Not surprisingly, the new Noble is already an outstanding success in Europe, where leading Swiss financial advisers have long been advocating that a minimum of ten percent of capital be put into tangible, tradable bullion assets. The daily rate fixed by the London Platinum Quotation, Ayrton Metals Ltd, and other authorised distributors, apply a minting and handling premium comparable to those applied to Krugerrands.

The Noble is traded internationally, and quoted in U.S. Dollars, as well as local currencies in the national press and on T.V. data services. Platinum is a dollar commodity, so this offers valuable protection against a falling £. In recent years, Platinum has performed well in the market, and with world demand (notably in the automotive and other high technology industries) rising steadily, the outlook for capital growth looks particularly promising at this time. Obviously Platinum prices can fluctuate in the short term, but because production costs are high, prices are cushioned against falling to a level too low to maintain a viable mining and refining operation. In fact, with the total output reaching the Western World at barely 70 tonnes a year (less than one fourteenth that of gold) a long-term surplus of Platinum is unlikely.

The growth that has seen the new Noble appreciate by 5.3% in only three months seems poised at least to continue, if not to accelerate.

**Unlimited Buy-Back Guarantee**  
Because the Platinum Noble is an official Bank of England legal tender, accepted in financial markets worldwide, Ayrton Metals Ltd guarantees to repurchase Nobles, at any time, at not less than the Bullion market price.

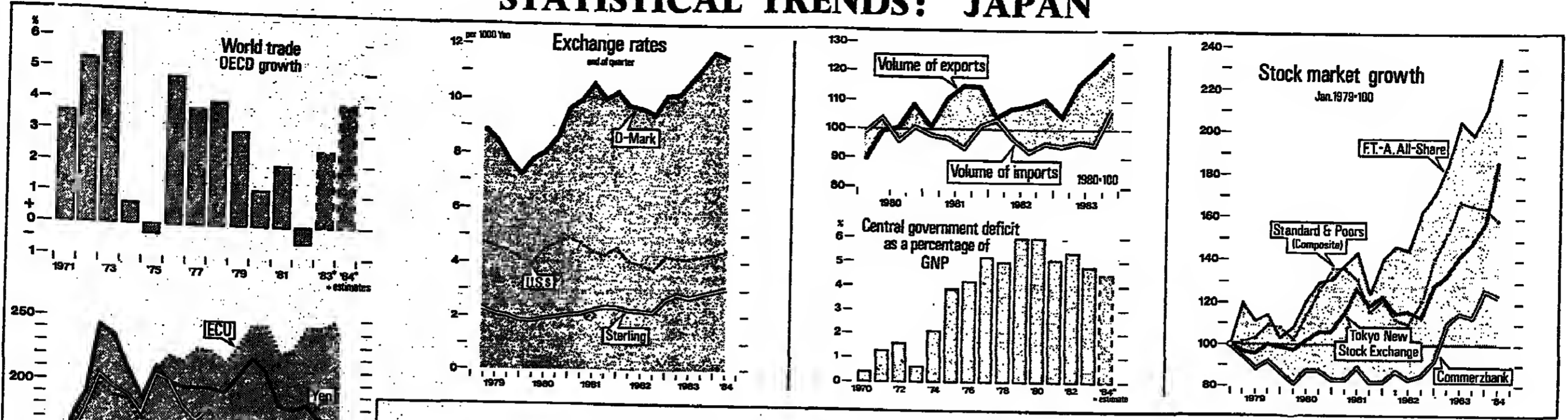
**How to Buy at the Right Price**  
At present there are no government restrictions on the sale of Nobles, and you or your client may freely buy and hold as few, or as many, as you wish. Coins purchased and held within Great Britain are, of course, subject to VAT but you may, by arrangement with Ayrton Metals Ltd, have your Nobles held in Jersey, where VAT does not apply. Other tax considerations are fully explained in the Price and Tax Guide included in the Information Pack available on request.

**FOR THIS FREE INFORMATION PACK**  
which will include details of our special introductory offer and all the intelligent information you need to assist your own appraisal of this important new investment opportunity, please write to: L.O.M. Government, c/o Ayrton Metals Ltd, Dept. 81, 30 Elly Place, London, EC2A 4ET, or telephone

**01-404-0970** Telex: 883908



# STATISTICAL TRENDS: JAPAN



## Emphasis shifts away from exports

EXPORTS HAVE been a substantial contributor over the past decade to the growth of national output in Japan, and export-led growth again supported a recovery in 1983 helped by a boom in the U.S. economy and an upturn in world trade. Growth of gross national product at around 6 per cent is significantly higher than in Europe but is modest compared with earlier growth rates in the Japanese economy. A return to those higher

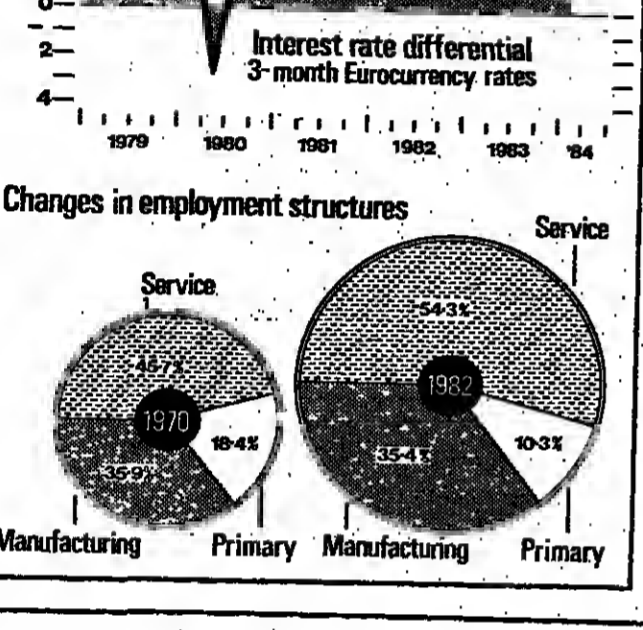
rates of output is unlikely to come from export growth, which may be limited by slow world expansion and trade restrictions. However, there is evidence of a recovery in domestic demand and increases in real wages and consumer spending should help to sustain the recovery. Overall there is little change in the budget in nominal terms, but a further decrease in the deficit as a percentage of GNP. Expenditure increases are planned in grants to local government, defence and service

costs of government bonds. Debt service represents about one sixth of central government expenditure. Further progress has been made in reducing inflation to below 2 per cent in 1983, with real earnings growing at around 2 1/2 per cent. However, real interest rates remain high, as do interest rate differentials with the U.S. The current account showed a hefty surplus of \$23bn in 1983 and is expected to grow to \$25bn this year. The net outflow on long-term capital, though, reached \$18bn in 1983.

fuelled by the growth in the outflow of Japanese capital attracted by high interest rates, and against a background of dull domestic demand. The yen weakened considerably against the U.S. dollar in 1983, but recently it has recovered strongly. A stronger yen, together with stable oil prices, will enable the Japanese economy to take advantage of the fall in dollar oil prices which took place in 1983. The Tokyo Stock Exchange index has risen strongly since 1970, apart from a drop in

1974-75 which were years of particularly high interest rates. The strength of the yen in 1978 and 1980 is shown by the substantial returns to dollar investors in those years. The index has increased dramatically in 1983-84 and the strength of the yen against the European currencies has resulted in high returns for European investors. Although bankruptcies have increased, the economy is generating sufficient new businesses to balance the increase in bankruptcies, and surveys indicate an increase

in business optimism. Industrial production is on the upturn, and in the car industry output has returned to an upward trend after two years of slight decline. Although Japan continues to dominate the world shipbuilding rankings with about half of world output, production has halved in the last ten years along with the decline in the industry. Japanese steel output has fallen in each of the last three years, although not as steeply as the fall in world production.



Year	% change		
	U.S.	Japan	OECD-Europe
1976	-8.9	-10.6	-6.9
1976	10.7	10.9	6.9
1977	5.9	4.2	2.6
1978	6.8	8.1	2.1
1979	4.4	7.2	4.8
1980	-3.6	4.5	1.9
1981	2.6	1.1	-1.9
1982	-6.2	0.4	-1.6
1983	6.6	3.5	0.3

Year	Ship completed gr. tons		
	Passenger (000)	Ship (000)	Crude steel (million)
1973	4,476	14,762	119
1974	3,936	16,896	117
1975	4,572	16,962	103
1976	5,028	15,840	107
1977	5,424	11,708	102
1978	5,976	6,308	102
1979	6,180	4,886	116
1980	7,080	6,036	111
1981	6,972	8,400	102
1982	8,888	6,164	99.8
1983	7,100	6,700	97.2

Year	% change	
	Tax and social security	Disposable income
1970	8.2	61.6
1976	8.7	61.3
1976	8.6	60.4
1977	10.4	60.6
1978	11.2	68.8
1979	12.0	68.0
1980	12.6	67.4
1981	13.6	66.4
1982	14.6	66.4

Year	Index (average)	Annual % rate of return		
		U.S.	£	DM
1976	415.4	26	65	35
1979	449.9	4	-23	-20
1980	474.9	9	29	47
1981	551.5	17	9	24
1982	547.9	6	-1	17
1983	646.9	23	27	41

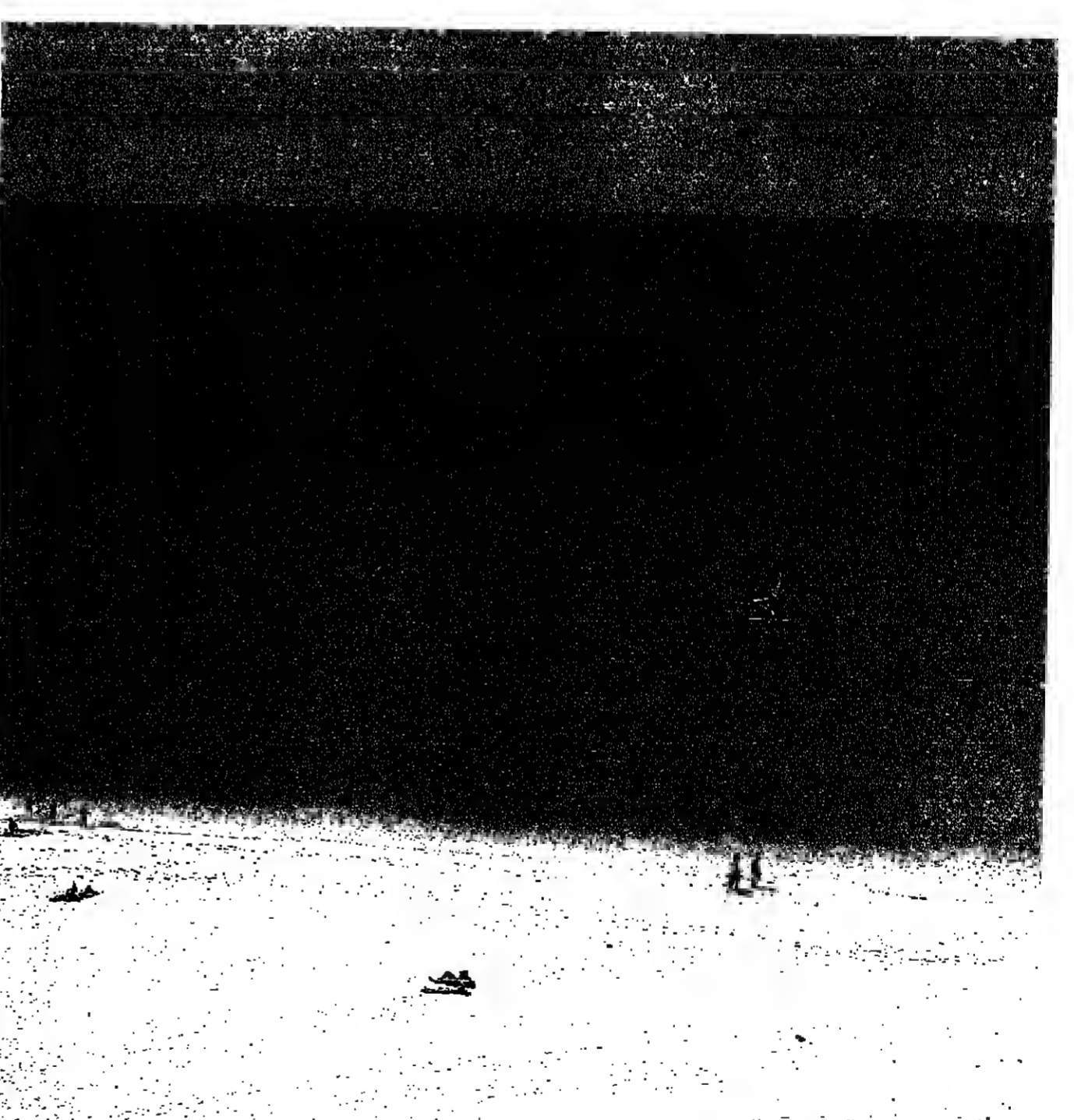
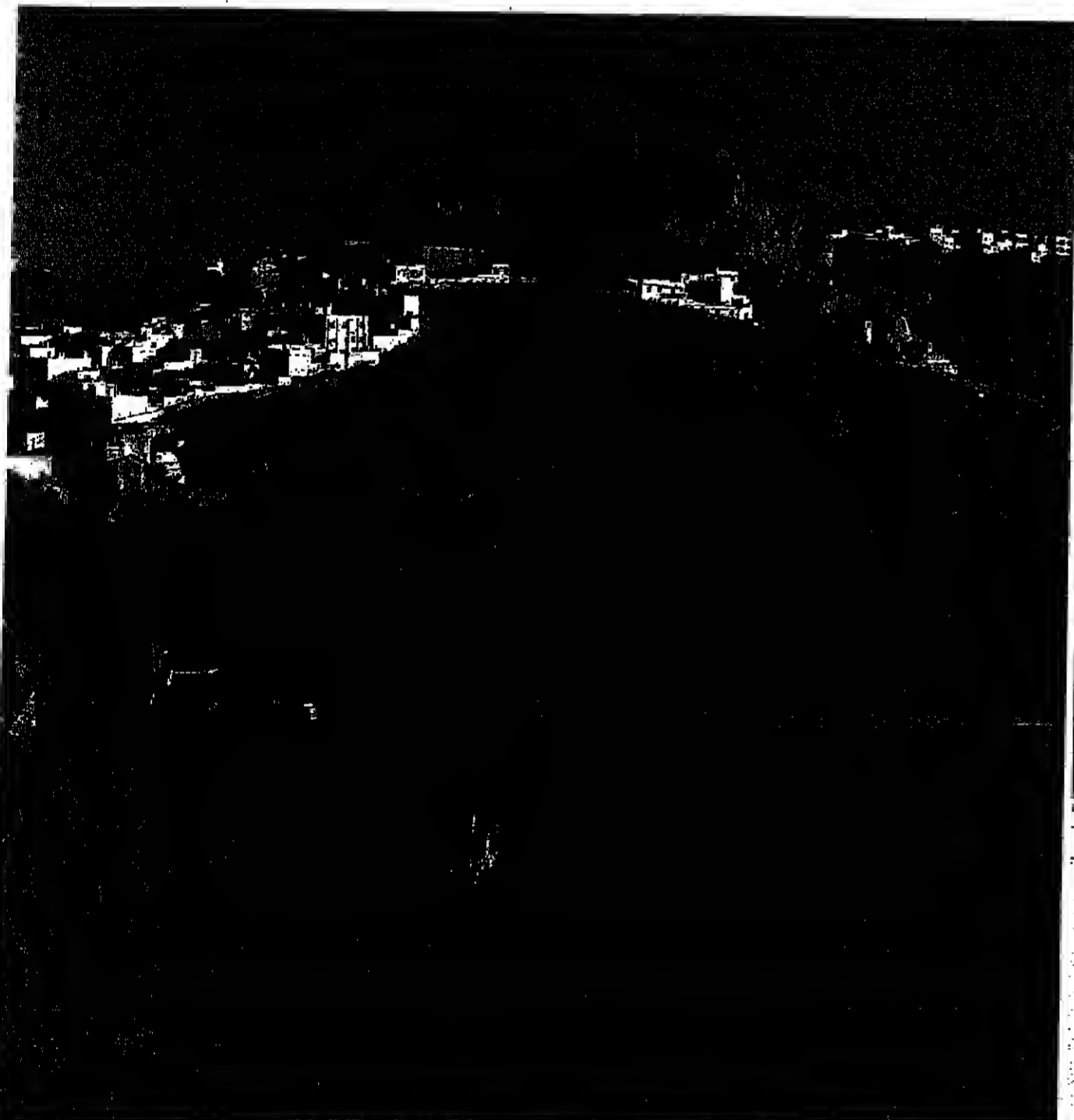
Year	Average earnings		Consumer prices
	(% change over previous year)	(% change over previous year)	
1973	21.6	11.7	
1974	27.1	24.5	
1975	14.8	11.8	
1976	12.5	9.3	
1977	6.5	8.1	
1978	6.5	3.6	
1979	6.0	3.6	
1980	5.3	8.0	
1981	5.2	4.9	
1982	5.1	2.7	
1983	4.6	1.9	
1984†	5.5	2.7	

Year	\$m			
	1982	1983	1984†	1984†
Imports	119,291	112,510	122,282	137,516
Exports	130,021	145,071	168,082	174,361
Trade balance	10,730	32,561	45,800	36,846
Invisibles balance	1,262	1,801	1,765	1,560
Transfers	7,488	22,256	24,977	67,404
Current balance	19,480	56,618	72,542	105,810
Excluding oil bill	53,488	61,881	64,314	24,577
Long-term capital (net inflow)	-14,872	-18,278	-18,882	-15,798

Year	% ownership			
	1969-70	1969-70	1979-80	1982-83
Financial institutions	21.7	30.7	36.9	37.7
Individuals	47.8	41.1	30.4	28.0
Business corps.	17.5	22.0	26.1	26.0
Foreign	1.9	3.3	2.5	5.1
Investment trusts	7.8	1.2	1.9	1.2
Securities cos.	3.7	1.4	2.0	1.8
Govt. and pub. inst.	0.2	0.3	0.2	0.2

Year	% growth		
	U.S.	Japan	OECD-Europe
1975	-1.2	2.3	-0.9
1976	5.4	5.3	4.6
1977	5.5	5.3	2.4
1978	5.0	5.0	3.0
1979	2.8	5.1	3.3
1980	-0.3	4.9	1.3
1981	2.6	4.0	-0.1
1982	-1.6	3.2	0.6
1983	3.3	3.0	1.0
1984	4.7	4.2	1.5

Year	U.S.\$ m	
	1973	1979
1973	136	-8,764
1974	4,683	-10,746
1975	682	6,770
1976	3,880	7,489
1977	10,918	22,266
1978	14,534	26,000



## Where are all the tourists?

They're five minutes drive from here, at one of the busiest, most popular beaches in Spain. One reason why so many people come to Spain, and come back year after year, is that we have so many secluded spots like this beach. Pick one for yourself and make it your own.

There are countless deserted coves along our coasts. There's peace and quiet inland, too. Up the mountainsides, just a short drive from some of our best-known beach resorts, are ancient villages sleeping alone and still as lizards in the sunshine. Go and discover one.

Leave your car outside the high white village walls. The streets will be too narrow for it, and sometimes they become steps. There will be a church and a small square. There will be tables outside a café. Sit, sip some wine and listen to the quiet.

We could tell you of peaceful places all around Spain, but you'll have more fun finding them for yourself. Then they will become the places you will always remember most fondly, where there wasn't a tourist in sight. Except you.



Spain. Everything under the sun.



UK NEWS

New Issue

This advertisement does not constitute an offer to sell or the solicitation of an offer to buy.

# \$3,432,000,000 Generic Treasury Receipts (TRs)

**\$1,200,000,000 Callable Treasury Receipts**  
**\$2,232,000,000 Coupon Treasury Receipts**

\$750,000,000  
U.S. Treasury Bonds of 8-15-13/08

Treasury Receipts (TRs) evidence ownership of future interest and principal payments on certain United States Treasury Notes or Bonds ("Treasury Securities"). Such interest and principal payments are direct obligations of the United States of America. The Treasury Securities will be held in custody by State Street Bank and Trust Company on behalf of the holders of the related TRs.

Callable TRs evidence ownership of both the principal payments due on redeemable Treasury Securities and any interest payments due thereon following the earliest redemption date.

Coupon TRs evidence ownership of the semiannual interest payments due on the Treasury Securities.

To obtain further information contact the undersigned.

**Paine Webber Capital Markets**

## Insolvency rules 'may deter directors'

By Alison Hogan

THE INSTITUTE of Directors has given a warning to the Government that "honest and competent directors" will be deterred from joining companies if proposed reforms of the insolvency law are passed.

"No amount of change to company law will eliminate rogues completely, and it is essential that any legislation does not carry with it unfortunate side effects for honest and competent directors," the institute says in its submission on the recent White Paper (policy document) on changes in insolvency law.

Tough penalties are proposed against directors of a company which is judged to have been "wrongfully trading," including the automatic disqualification from being a director of any other company. The institute feels that penalties should apply only to controlling directors who have a majority equity stake in the company.

"Directors will not be prepared to serve if, unlike other professionals, they are called upon to accept personal liability not only without limit but also without proof of fault," it says.

It could result in skilful and careful directors no longer offering their services to companies in most need of them, "namely those whose viability is in doubt."

Directors would also be under a personal pressure to ensure that companies were wound up at the first sight of trouble.

The institute says that this was completely at variance with the basic principle of a recent Cork committee finding on insolvency that a business should be kept going as long as possible.

## RCA and Hitachi continue to promote videodisc systems

BY JASON CRISP IN LONDON

RCA and Hitachi are to carry on with plans to promote the CED videodisc system in the UK in spite of RCA's recent decision to stop making players in the U.S.

RCA Videodisc, the UK subsidiary of the U.S. broadcasting publishing and electronics giant, plans to spend over £1m promoting videodiscs in Britain this year and expects Hitachi, the Japanese electronics group, to spend a similar amount. The company also plans to launch 20 new titles a month.

RCA's sudden decision earlier this month to stop marketing and producing CED videodisc players in the U.S. after massive losses has led to considerable speculation that it also marked the end of the system in the UK.

In Britain the players are sold by Hitachi, which makes them in Japan. These players are also sold by GEC under its own name. The discs themselves are sold by RCA. The CED videodisc system was launched in Britain last October by

RCA and Hitachi with a joint £2m promotion.

Mr Steve Bernard, managing director of RCA Videodiscs, said: "We will continue to support our hardware partners aggressively as planned. We already have a very significant monthly release schedule lined up for the rest of the year, and indeed one of our April releases Making of Michael Jackson's Thriller, is set to be a blockbuster on videodisc."

Pioneer of Japan and Philips, the Dutch electronics group, also sell a more sophisticated videodisc system in the UK. Videodiscs are used for showing films and special programmes on a television set rather than a video cassette recorder cannot record broadcast programmes. The videodiscs are cheaper and slightly better quality reproduction than VCRs.

Hitachi has so far only made a brief statement saying that it would continue marketing CED videodiscs

in the UK. The company is expected to make a full statement shortly because of concern expressed by dealers which hold substantial stocks of the players.

However, the fact that RCA is to continue promoting the discs strongly would indicate that Hitachi will persevere in the market for the time being. So far sales have been disappointing. Over 11,000 were delivered to dealers for the launch and only about 7,000 have been sold. The two companies had hoped to sell 25,000 by the end of the year and 100,000 in 1984.

Hitachi also has substantial stocks. In addition to those in the hands of dealers it is thought to have a further 50,000 machines in stock. The UK is also the only market where CED videodiscs are sold outside the U.S. It is not clear whether Hitachi's promotion is aimed at clearing stocks or whether the company still has a long-term commitment to the market.

## Warning on pirate radio advertising

By Raymond Snoddy

THE DEPARTMENT of Trade and Industry (DTI), may write to companies which advertise on pirate radio stations warning them that they could be liable to prosecution.

The Independent Broadcasting Authority has asked for tougher measures against the pirates and the DTI is joining the Home Office in a co-ordinated campaign against them.

The IBA, which says it knows of the existence of about 51 pirate stations in the UK, has forwarded a number of advertising company names to the DTI.

It is not an offence to advertise on pirate radio but the DTI believes such companies could be guilty of aiding and abetting the pirates in a breach of the Wireless Telegraph Act of 1949.

If the DTI decides to move against the advertisers it would be the first such prosecution of advertisers on land-based pirate stations.

## Yorkshire TV to seek listing

By Charles Batchelor

YORKSHIRE TELEVISION plans to seek a quotation on the Unlisted Securities Market (USM) in June which will value it at about £20m. Yorkshire is one of the last commercial TV companies without a stock market listing.

Trident Television, which has been reducing its non-casino interests, would make a 15 per cent stake in Yorkshire available for sale to investors for an estimated £2m. Trident has a further 15 per cent stake which is held by N.M. Rothschild, the merchant bank, in an escrow account, for placing with local interests.

Trident initially held 100 per cent of Yorkshire and of Tyne Tees Television.

## Peters Stores PLC

Unaudited Group Results for the 26 weeks ended 24th December, 1983

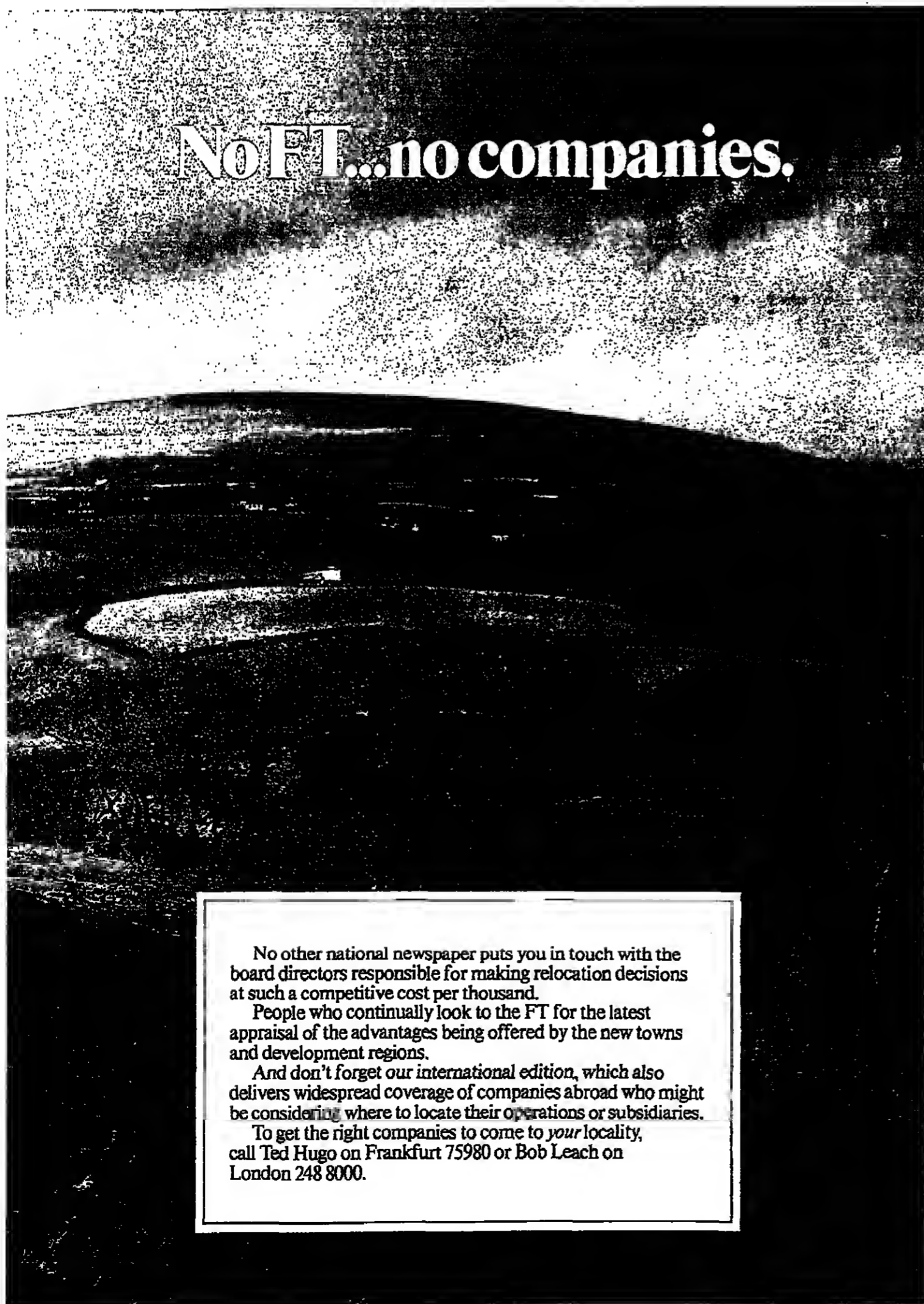
	26 weeks to 24/12/83	52 weeks to 25/8/83	26 weeks to 25/12/82
Net sales	£800 4,786	£800 10,308	£800 5,863
Profit on trading	425	549	363
Surplus on property sales	2	162	161
Interest charge	427	701	624
Profit before taxation	66	249	147
Taxation	5	24	3
Profit after taxation	61	222	144
Extraordinary item: closure costs	-	61	-
Profit available for appropriation	61	161	144
Dividends	32	37	32
Profit retained	£22	£124	£112
Earnings per share	1.8p	6.9p	4.5p

Retailing profits continued to improve during the first half but sales in the busy spring have been somewhat disappointing. As stated the results for the full year will depend on the final quarter. We are embarking on a major modernisation programme of all our stores to bring us to the forefront of the Jeans and Casualwear Market.

Our departmental store subsidiary, Isaac Walton Limited, has completed the first stage of its modernisation programme and is showing an encouraging rise in sales and profits.

The property subsidiaries, whilst not selling any developments in the first half, are very active with several potential schemes in the pipeline. All current developments are proceeding as planned and the Stadium Industrial Estate in Getonhead is only slightly behind schedule.

The Directors have declared an Interim Dividend of 1.0p per 10p Ordinary Share (1983-1.0p) payable on the 11th June 1984 to Shareholders on the Register as at the close of business on the 10th May 1984.



No FT...no companies.

No other national newspaper puts you in touch with the board directors responsible for making relocation decisions at such a competitive cost per thousand.

People who continually look to the FT for the latest appraisal of the advantages being offered by the new towns and development regions.

And don't forget our international edition, which also delivers widespread coverage of companies abroad who might be considering where to locate their operations or subsidiaries.

To get the right companies to come to your locality, call Ted Hugo on Frankfurt 75980 or Bob Leach on London 248 8000.

New Issues April 12, 1984

## Federal Farm Credit Banks Consolidated Systemwide Bonds

11.625% \$485,000,000  
SERIES M-1986  
CUSIP NO. 313311 ME 9 DUE JULY 21, 1986  
Interest on the above issue payable January 21, 1985, and semiannually thereafter.

12.50% \$883,000,000  
SERIES F-1989  
CUSIP NO. 313311 LA 8 DUE APRIL 20, 1989  
Interest on the above issue payable October 20, 1984, and semiannually thereafter.

Dated April 23, 1984 Price 100%

The Bonds are the secured joint and several obligations of The Thirty-seven Federal Farm Credit Banks and are issued under the authority of the Farm Credit Act of 1971. The Bonds are not Government obligations and are not guaranteed by the Government.

Bonds are Available in Book-Entry Form Only.

## Federal Farm Credit Banks Funding Corporation

90 William Street, New York, N.Y. 10038  
Peter J. Carney  
President

This announcement appears as a matter of record only.





"You had to queue for weeks just for the opportunity to spend five minutes with it.

It was kept in a back room or maybe the basement.

It was protected from pollution by an anti-dust carpet and elaborate air conditioning.

You needed a Ph.D. in computer science just to switch it on.

Now I have an infinitely more advanced computer that lives right here on my desk. The Wang PC.

It costs a fraction of its predecessor.

It's capable of word processing, accounting, forward planning, filing, drawing graphs. You name it. The keyboard can even sit on your knee and look pretty.

I can please myself whether I write my own programmes or not, there's more than enough software off the shelf.

**"We used to have a computer as powerful as this Wang PC back in the '70's. It weighed twenty tons, took seventy people to operate it and cost slightly less than a battleship."**

Above all, it integrates with the complete Wang product range of office automation equipment. In fact it's the cornerstone of Wang Office Automation.

It also connects into other computers.

So unlike the twenty ton version, this one, the Wang Professional Computer, won't be out of date before you pay for it.

You just keep adding to it over the years."

**WANG**

**The Office Automation  
Computer People.**

WANG (UK) LTD., 661 LONDON ROAD, ISLEWORTH, MIDDX. TEL: 01-560 4151. TELEX: 928446.  
LONDON, BIRMINGHAM, MANCHESTER, LEEDS.



Australia's  
quietest  
flying  
machine



## CBI call to end pension indexation

By Eric Short

THE CONFEDERATION of British Industry has called on the Government to discontinue the full indexation of civil service and other public sector pension schemes.

It wants the Government to bring the protection of public service pensions in line with that given to private sector pensions which depends on the profitability of private sector companies.

The CBI also rejects the Government's proposals on the early leaver problem - the loss of pension rights when an employee changes jobs.

The CBI, in its evidence to the Government's special inquiry into pension provision under the chairmanship of Mr Norman Fowler, Secretary of State for Social Services, accepts that pensions should be protected against erosion by inflation. But not at a cost that threatens the prosperity of the business sector.

The CBI is opposed to the Government adding further burdens on state and occupational pension schemes, all of which have to be borne by the private sector. It points out that many employers do what they can to protect pensions in payment and the CBI is urging employers to voluntarily improve deferred pensions.

But the CBI warns the Government that forcing companies to guarantee indexation of benefits would threaten the continued existence of private sector occupational pension schemes.

The CBI also supports the concept of personal portable pensions. It wants employees to be able to opt out of the company pension scheme and set up their own personal portable pension, but only if the employer and the workforce agree. It is opposed to the proposals put forward by the advocates of portable pensions that employees should have the right by law to opt out of the company pension scheme.

In general, the CBI wants to see more portability brought in generally, but as a third tier on top of the present state and company pension schemes.

## Steady trend in pay deals

By DAVID BRINDLE, LABOUR STAFF

THE emerging pattern of April pay settlements shows little change from the trend through the winter of basic rate rises of between 4 and 8 per cent, according to Incomes Data Services, the pay research organisation.

Although the number of settle-

ments below 5 per cent seems to be fewer, IDS says, there is not a steady upward drift.

The latest report of the research group concludes that the "centre of gravity" within the 4-8 per cent spread has risen.

It ascribes that partly to an in-

creasing incidence of pay deals 2 or 3 percentage points above the rate of inflation.

The report notes that the relatively large number of settlements in the retailing sector in April appears to be concentrating between 6 and 8 per cent.

# NEW YORK NEW YORK

Condominium office suites  
for sale

Major new development  
in  
mid-Manhattan

UK AND FAR EAST SOLE AGENTS

**Goddard & Smith**

22 King Street, St James's, London SW1Y 6QZ

Telephone: 01-930 7321

Telex: 8955411

ZURICH

Just Opened

Tokai Finance (Switzerland) Limited

- Securities
- Loans and international transfers
- Other financial services

General Manager: Peter H. ...

Address: Bahnhofstrasse 45

8001 Zurich, Switzerland

Telex: 814002

Telephone: 01-2213480

## Now there's another good reason to bank with Tokai.

Announcing the opening of Tokai Finance (Switzerland) Limited, Tokai Bank's newest wholly owned subsidiary. In addition to managing and underwriting public and private bonds, this office will also handle syndicated loans and other financial services.

More important, Tokai Finance (Switzerland) Limited is part of Tokai's worldwide network. With 31 overseas offices, more than 1,100

correspondent banks, and over 100 years of experience, Tokai gives you fast access to a world of information and analysis. And when you're ready to put ideas into action, Tokai's vast assets\* can help.

So for banking needs anywhere from Amsterdam to Zurich, talk to Tokai. And let us share our world of experience.

\*\$6,538 (in millions of US\$)



**TOKAI BANK**  
The International Pathfinder

Head Office: 21-24, North Colonnade, Nishi-Ku, Nagasaki, Japan. Tel: 092-211311. International Banking Service: 21, Cannon Street, London, UK. Tel: 01-593-0111. Overseas Network: (Branches & Agencies) New York, Los Angeles, Chicago, London, Frankfurt, Singapore, Hong Kong & Seoul. (Representative Offices) Toronto, Houston, Mexico City, San Francisco, Paris, Zurich, Tokyo, Barcelona, Miami, London, Manila, Jakarta, Beijing & Sydney. (Subsidiaries) Tokai Bank of California, Tokai International Ltd, Tokai Bank Nederland NV, Tokai Finance (Switzerland) Ltd, Tokai Asia Limited, Tokai Finance & Investment London, Bangkok, Hong Kong & Sydney.

BRITISH AEROSPACE



هذو اهدا اهدا

UK NEWS

# Senior Tories press for change in top party post

BY PETER RIDDELL, POLITICAL EDITOR

SENIOR CONSERVATIVE MPs have advised Mrs Margaret Thatcher, Prime Minister, that Mr John Selwyn Gummer should be removed from one of his two present posts - the chairmanship of the Conservative Party or Minister of State at the Department of Employment.

These warnings from senior members of the executive of the Conservative backbench 1923 Committee reflect grumbling among MPs about Mr Gummer's performance as party chairman. He is felt to have lacked the authority and punch of Mr Cecil Parkinson, his predecessor, who stepped down last year shortly before admitting that he had had a love affair with his secretary, who was expecting his child.

The senior Tories are believed to have argued that the change should occur within the next few months. Criticisms have been dismissed by some of the Conservative party's senior leadership as the predictable carping of certain former party office holders who were dismissed or who never combined their party posts with ministerial office. Nevertheless, the complaints against Mr Gummer are widespread, coming from both senior and new MPs. They vary from charges of disorganisation to those

of insufficient weight. Some MPs have argued that Mr Gummer ought to be counterattacking more against Labour in weekend speeches and on the media.

Even some senior ministers concede that the combination of the two jobs has not worked out, though they argue that in part this is not Mr Gummer's fault since the problems have resulted from special circumstances when he hurriedly succeeded Mr Parkinson.

At the time, however, Lord White-law, the Leader of the House of Lords, privately argued that it would have been better to have opted for the traditional arrangement - whereby the party chairman holds a non-portable ministerial post, possibly outside the Cabinet, such as Paymaster-General.

This is now the view of several Cabinet ministers. But a snag is that unlike Mr Parkinson, Mr Gummer is not in a financial position to give up a ministerial salary.

The general expectation among senior Tories is that Mr Gummer will lose one of his two jobs, probably in the expected September ministerial reshuffles. Much may depend upon how he and the Tory Party perform in the three forthcoming parliamentary by-elections and the local council elections on

May 3, and in the European elections on June 14.

Mrs Thatcher apparently still thinks highly of Mr Gummer as a rising member of her Government, although she may be reluctant just yet to promote him to the Cabinet ahead of other promising middle-rank ministers.

Defenders of Mr Gummer argue that the critics are unfair since he has been very active behind the scenes at Conservative Central Office and that he has been vigorous in the row with the BBC over the Panorama programme alleging far-right infiltration of the Party.

Moreover, until recently, Mr Gummer has been tied up two days a week in the House of Commons on the Trade Union Bill, but this has now completed its committee and report stages and he should have more time for party matters.

The argument about Mr Gummer's role ties in with criticisms by senior Tory MPs of some other of Mrs Thatcher's close advisers such as Mr Michael Alison, her parliamentary private secretary. He is regarded as too self-effacing to act as an effective channel between backbenchers and the Prime Minister, though he has been seen more frequently at the Commons in recent weeks since the criticisms were first made.

# Alexander settles with former directors

By Alexander Nicoll

ALEXANDER & Alexander Services, the world's second largest insurance broker, has settled with four out of five former executives who it accused of misappropriating \$56m (£38.5m) from its British subsidiary, Alexander Howden.

Mr John A. Bogardus, chairman of the U.S. company, said: "We are satisfied with the outcome of this matter. Not only have we gained certain assets, but this agreement also results in significant savings of management time and money."

Mr Ian Fosgate, a former noted Howden underwriter, is not a party to the accord, and Alexander & Alexander is continuing litigation against him.

After the purchase by Alexander & Alexander of Howden in 1982 for about \$300m, it alleged that the five executives had misappropriated up to \$55m by diverting money into companies they secretly controlled.

The U.S. company took an extraordinary \$40m charge against earnings in 1982, although it recovered \$26m of the lost funds.

The four former officers and directors who have settled are Mr Kenneth Grob, former Howden chairman, Mr Ronald Comery, Mr Alan Page and Mr Jack Carpenter.

**The Kingdom of Denmark**  
**U.S. \$500,000,000**  
**Floating Rate Notes Due October 1990**  
 For the six months  
 13th April 1984 to 15th October, 1984  
 the Notes will carry an interest rate of 11 1/4%  
 per annum with a Coupon Amount of U.S. \$581.34 per  
 U.S. \$10,000 Note and U.S. \$14,533.42 per U.S. \$250,000  
 Note, payable on 15th October, 1984.  
 Listed on the Luxembourg Stock Exchange  
 By: Bankers Trust Company  
 Fiscal Agent

**Purchase of Gold**  
 in any quantity from 50 gr. to 250 kg. per day.  
 Only private direct purchase. No intermediaries.  
 Expedite sellers please reply under number:  
 2735 ch. Oren Rusli Avening Rd, P.O. Box  
 CH - 3001 Berne.

**Purchasers find we have some remarkable properties.**  
**FULLER PEISER**  
 Chartered Surveyors  
 Progressive and Professional  
 Head Office: Tavistock House, 44 Bedford Circus, London WC1R 4EU. Tel: 01-531 6825. Telex: 7794.  
 Fuller Peiser & Associates have 24 offices in the UK, USA and Canada.

**WERELDHAVE**  
 N.V. Beleggingsmaatschappij Wereldhave  
 (Investment Company with variable capital)

**Shareholders' Meeting**  
 NOTICE IS GIVEN that the Annual General Meeting of Shareholders of the Company will be held at the Promenade Hotel, 1 van Solikweg, The Hague, The Netherlands at 11.00 a.m. on Wednesday, 2nd May, 1984.

**AGENDA**

1. Opening
2. Report of the Board of Management
3. Annual Accounts for 1983
4. Approval of the proposed dividend per share of Dfl. 9 in cash
5. Appointment of Members of the Supervisory Board

In accordance with Article VI.2, Section 2 of the Articles of Association the following directors are to retire by rotation:  
 J.F. Visser  
 J.M.G. Hoes  
 Messrs. Visser and Hoes are available for re-election. The meeting of proxy shareholders proposes the appointment of:  
 J.F. Visser - J.A.E. Koning  
 J.M.G. Hoes - Mrs. H.J.M. van Bortel

6. Questions before closure of the meeting
7. Closure of the meeting.

**Shareholders' Rights**  
 Shareholders and usufructuaries with voting rights who wish to attend the meeting have to deposit their shares or deposit receipts from an inscription as defined in Article VIII.6, Section 2 of the Articles of Association on or before 28th April, 1984 at the office of the Company, 23 Nassaulaan, The Hague, or at the offices of Pierson, Holding & Pierson N.V., Algemene Bank Nederland N.V., Coöperatieve Centrale Raiffeisen-Boerenleenbank B.A., Bank Mees & Hope N.V., Credit Lyonnais Bank Nederland N.V., Kempen & Co N.V. in Amsterdam, Rotterdam, The Hague and Utrecht, in so far as there established, or at the offices of Morgan Grenfell & Co. Limited, New Issue Department, 21 Austin Friars, London EC2N 2HB, where arrangements may also be made for voting by proxy.

**Annual Report 1983**  
 Copies of the Annual Report (in English) may be obtained in the United Kingdom from Morgan Grenfell & Co. Limited, New Issue Department, 21 Austin Friars, London EC2N 2HB, or from Hoare Govett Limited, Heron House, 319-325 High Holborn, London WC1 7PB on or after 13th April, 1984.  
 By order of the Supervisory Board  
 The Hague,  
 13th April, 1984

# William Press losses inquiry out this week

BY RAY MAUGHAN

THE RESULTS of a worldwide investigation into the affairs of William Press will be unveiled on Wednesday by Amec, the international civil engineering group formed 18 months ago through the merger of Press and Fairclough Construction. Amec will also reveal the terms of a severance compensation deal agreed with former William Press executives who served briefly on the new group's main board before resigning last year.

The investigation was conducted by Price Waterhouse which has been appointed to replace Arthur Andersen as joint auditor to Amec with Armitage & Norton. The inquiry began after the discovery in January last year that Press's Haverton Hill Fabrications subsidiary had made operating losses of £7.7m in 1982 and would require a further £4.3m to cover closure and rationalisation costs.

Haverton's contract losses, independently reviewed at the time by Price Waterhouse, meant that Press's profits fell in 1982 from £7.5m to £732,000 before tax which, after all charges, led to a £7.5m loss.

Sir Oswald Davies, the chairman of Amec and formerly head of Fairclough, said last June that he was "extremely disappointed with this result," even though the Fairclough side of the merger was growing strongly with a 32 per cent increase in pre-tax profits to £17.8m in 1982. Price Waterhouse's investigative brief was consequently widened to

include the whole of Press's international engineering contracting activities. Amec will announce the results of this inquiry, which continued throughout last year, with its results for 1983 to be published this week.

The scope of the examination, Amec believes, is comprehensive although the scale of any further contract provisions is not thought to match the provisions required at Haverton. An immediate consequence of the Haverton investigation was to change the concept of the Amec merger. What had originally been described as a "partnership" of complementary businesses became effectively the acquisition of Press by Fairclough.

A "new executive board" was constituted to ensure separate controls and performance monitoring throughout the group. As Sir Oswald told shareholders last year: "This board will report to me and thence to the Amec board."

The three Press representatives on the top Amec board have since left and Amec has now negotiated what it hopes is a compromise compensation agreement which will be acceptable to its shareholders.

When the merger document was drawn up, it disclosed that Mr William Hawken, the deputy chairman of Amec, had signed a service contract on May 14 1981 which was terminable by Press on or after May 14 1986. His annual salary in 1982 was £98,600.



## TWA is now the official airline to New York.

The State of New York has shown its high regard for TWA by appointing us their Official Airline for 1984. More New Yorkers will tell you that they think the best way to fly to their fabulous, exciting city is by TWA. And they should know. They know you'll enjoy the service, comfort, ease and convenience of TWA. You'll appreciate the exclusive TWA terminal in New York that gets you in and out quickly and easily.

**£329 Return**  
 And they know you won't get cheaper fares from any other scheduled airline from Heathrow. You can fly TWA to New York for only £329 Super Apex return.  
 In fact New York State is confirming what we've been saying for a long time. You're going to like us. And we say with confidence that you'll love New York.



You're going to like us

\* Super Apex return fare. Valid for travel Mon.-Thurs. from 1st April to 31st May.

Research and Technical Directors

## Have you considered buying-in technical help just like any other service?

Your company will be faced, sooner or later, with a gap in its technological resources. This is when Harwell can help.

Many companies, large and small, buy-in technical assistance from Harwell to complement their own expertise. We work for individual companies, for groups of customers sharing a common interest, and as sub-contractors supplying special expertise within larger contracts.

We are backed by some of the world's most advanced research and computer facilities, and we work under strict commercial security.

**So when you need technical help contact Harwell.**

To find out more about us now, fill in the coupon.

To Mr D.F. Jephcott,  
 B329 Harwell Laboratory, UKAEA, Oxonshire OX11 0RA.  
 Telephone Abingdon (0235) 24141 extension 2000

Please send information to

Name .....

Position .....

Company .....

Address .....

**HARWELL**  
 Technology for Industry

United Kingdom Atomic Energy Authority



UK NEWS

# European public sectors urged to speed job creation

BY TIM DICKSON

BRITAIN MAY have the highest number of unemployed of any country in Europe - but it can also boast a leading role in local initiatives to create new jobs.

Based on the evidence of several recently researched case studies, a new report from the Economist Intelligence Unit urges more local and regional authorities throughout Europe to encourage the expansion of existing and the creation of new businesses.

"Unless the public sector recognises that the claims of local action are such that public funds should be provided as the mainstay of support, then local action will peter out in a few years," the report says.

This would require "a willingness in most countries of Europe to acknowledge that such funds are more effectively spent in that way than in expensively persuading invisible investors that there is only one place in Europe worth investing in - the town or city doing the promotion."

The report considers the history of projects in the UK, the Netherlands and France, including UK enterprise agencies, British Steel Corporation (Industry), the job creation arm of the steel corporation, and

the joint project between the Dutch electricals giant Philips and the private British company Job Creation to alleviate the effects of a major closure in The Hague.

The Philips project "shows that a prime sponsor, private in this case but public sector in others, ... can make a real contribution to the community with which it is concerned."

A bold commitment moreover, induces others to join the scheme for as the report points out, an initially sceptical municipality of The Hague had now asked Job Creation to develop a second enterprise centre for small companies.

The study suggests that communities, local authorities and local employers may be surprised by the energy, talent and initiative lurking in even the most depressed areas.

But it was crucial that objectives were clearly defined. For example, new companies should not be helped to put others out of business by producing a product or service for which there was already adequate local supply.

EIU Special Report No. 162, *Creating New Jobs in Europe; the role of local initiatives*. Spencer House, 27 St James's Place, London SW1; Price £30.

Ian Rodger analyses the prospects for the manufacturing sector

# Managers hardened by recession

THERE ARE NOT many backers these days for what are euphemistically referred to as smokestack or sunset industries, especially in a Conservative government enthralled with microchips and fast food franchises.

But Mr John Butcher, the junior Industry Minister, has suddenly become aggressively enthusiastic about the importance and prospects of heavy manufacturing industries in Britain's future.

"I believe manufacturing will always be the basis of wealth creation in this country," Mr Butcher said in an interview last week. "It is this genuine statement of belief, or is he just making a virtue out of necessity, given his special ministerial responsibilities for the shattered West Midlands?"

The former computer industry executive chuckles, but insists that he really believes it. "Manufacturing matters, and engineering matters."

Manufacturing industry, especially engineering, is about to become fashionable again, he claims. Businessmen will soon invest in manufacturing with at least as much enthusiasm as they now invest in service industries, because that's where the big profits will be made.

Employment in manufacturing in Britain, which has dropped dramatically in recent years, could even start rising again at some point. Mr Butcher believes that a con-

junction of factors, mainly new manufacturing technologies and the emergence of a new generation of industrial managers, is making the restoration of Britain's industrial base possible.

"The traditional sectors have been dominated by people who had five more years to go, and people in that position don't tend to think about long term investments."

The recession has seen off a lot of them. Their companies have been either bought out or put in receivership, but one way or another, their order books have been passed on to a new kind of manager-director.

"Typically, he is 35 to 45, he is professionally trained, he is bright, he's tough and he's very angry and hungry. He has survived the recession and he is determined to do some damage in the home and international markets."

These managers are arriving, he says, at a time of great upheaval in manufacturing technologies, with new methods of design, new materials and new factory techniques becoming available every day. Many hold out the prospect of significant improvements in productivity and profitability.

He acknowledges that many British manufacturers are well behind their overseas competitors in the application of new manufacturing technologies, but argues that change is occurring at such a rapid

rate that the opportunities for them to get back in occur very frequently.

Catching up implies the use of a lot of engineering expertise, and Mr Butcher speaks of a "huge national intellectual effort" already under way in some sectors.

And that, in turn, is helping to improve the status of engineers. They're in short supply now, and if the labour market works in the normal way, then graduates in the new engineering disciplines are in for a substantial pay rise.

This series of trends favouring a renewal of manufacturing is fortunate, Mr Butcher argues, because Britain has little choice but to redevelop its manufacturing industries if it is to maintain its living standards when the oil surplus disappears.

The service industries make a much larger contribution to the economy and to employment than manufacturing ever will.

"But only 38 per cent of services are internationally tradeable including insurance and banking, whereas 80 per cent of manufactured goods are internationally tradeable."

He points out that the proportion of Britain's GDP coming from manufacturing - 23.4% - is lower than that in West Germany (34.8 per cent), Japan (30.6 per cent) or France (27.6 per cent).


"I believe the time is coming again when the best returns will be made in the manufacturing sector, and that makes me an optimist on the jobs front. I think those who say structural change is here forever are fundamentally misguided. They're simply taking the more malign trends of the last three years and projecting them forward forever in the same way as their equally misguided counterparts in 1981 projected the trends of the period from 1930 to 1934."

Given his optimism, Mr Butcher does not see the need for massive government intervention or disciplines in the manufacturing industries.

"If we were suffering from hardening of the arteries, then it is not a blood transfusion that is needed, but some vitamin E to improve the flow."

That is the rationale behind most of the Government's programmes for industry. Some aim to show managers how to use new technologies, such as computer aided design, others help them buy robots and computer controlled machine tools.

Mr Butcher believes this is the right approach. The "classics" he would come in disciplines would be to focus some programmes more sharply to indicate what industries the Government wants to see develop.



**SINCE THE BUDGET ALL ENTERPRISE ZONES ARE LOOKING MORE ATTRACTIVE BUT SOME ARE MORE ATTRACTIVE THAN OTHERS**

Telford's Enterprise Zone is sited alongside a motorway next to a major shopping centre and surrounded by the attractive Shropshire countryside. There are sites immediately available for industrial, warehouse, hi-technology office and hotel developments - all with 100% capital allowances and 10 years rate free from 15 January 1984. Now that the Chancellor has reduced building allowances for everyone outside an Enterprise Zone (and paved the way for further reductions) ours looks even better.

Telephone: The Enterprise Zone Manager on 0952-502377 or 502377.

**ENTERPRISE TELFORD ZONE**

The most cost-effective Enterprise Zone.

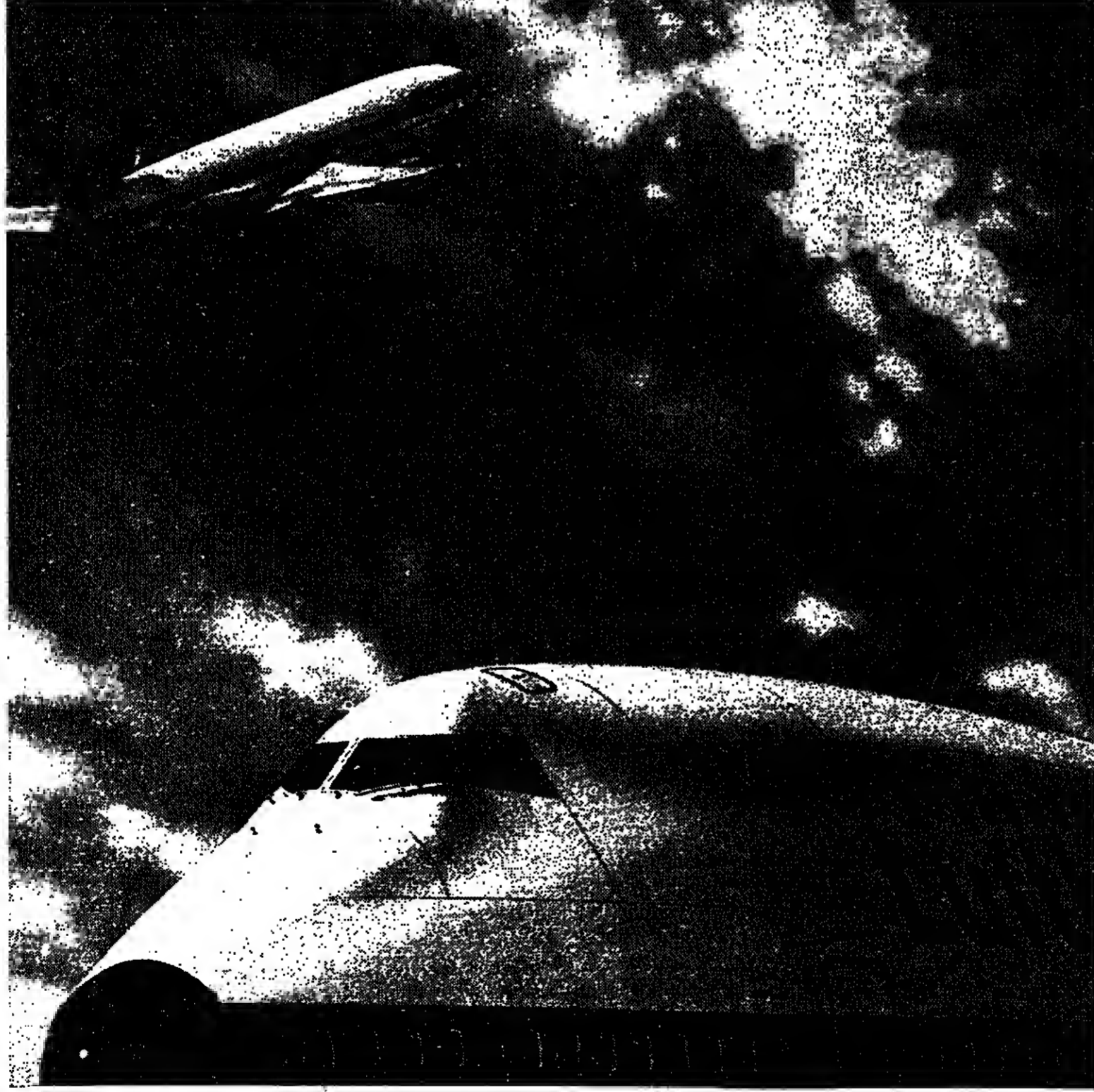
Enterprise Zone Manager, Handhouse House, Central Square, Telford Centre, Telford.

<p>The Lombard 14 Days Notice Deposit Rate is</p> <p><b>8 3/4 %</b></p> <p>Minimum deposit: £2,500</p>	<p>The Lombard Cheque Savings Rates are</p> <p><b>8 1/4 %</b></p> <p>When the balance is £2,500 and over</p>	<p><b>6 1/4 %</b></p> <p>When the balance is £250 to £2,500</p>
--	--	---

**Lombard North Central** 17 Bruton St., London W1A 3DH  
For details phone 01-409 3434 Ext 484


# "When I have a choice I choose Lufthansa."

This is an authentic passenger statement.



 **Lufthansa**  
German Airlines

## ITV screen a Stevenson classic!



In two parts, tonight and tomorrow Tuesday, April 17.  
A tale of passionate rivalry that brought tragedy to a noble house.  
Richard Thomas, Michael York, John Gielgud, Timothy Dalton, Finola Hughes, Nicholas Grace and Brian Blessed head the outstanding cast. Dramatised from the story by Robert Louis Stevenson.

**THE MASTER OF BALLANTRAE**

SEE EPISODE ONE TONIGHT AT 9 P.M.

ANOTHER EXCEPTIONAL DRAMA FROM **ITV**

## PROPHETS? PROFIT LEADERS TO BE?

Where is your business going in the next few years? Are you and your colleagues in charge of your future?

**GHN** work with key managers to evolve solutions to career management, development and outplacement problems.

The need arises

- where management's progress is frustrated by an individual's performance or attitude
- where management is apparently unable to satisfy an individual's goals
- where projected redeployment or redundancy is the cause of management concern.

TELEPHONE: PETER GARDNER, HILL ON 01-402 8229  
WRITE TO: GARDNER HILL NEEDHAM  
16 HAMOVER SQUARE, LONDON W1R 8AJ

**GHN**



12:03

# The Diners flight delay insurance is very nearly worth waiting for.

Fog. Mechanical trouble. Ice on the runway. Or no reason at all! How often have you had to hang around airports waiting for your plane? Too many times! Diners have made it a little more bearable with the Diners Flight Delay Insurance\*. It's free. All you have to do is to charge your scheduled airline ticket to your Diners Club Card.

If your departure is delayed by four hours or more you can automatically get up to £75 credit on your Card.

**Food and Drink**

This can be spent on anything that will make the time pass that little bit more comfortably. Food. Drink. Hotel bills. And you can charge the same amount if you should miss a connection because of a delay.

Baggage has an uncanny habit of going astray.

**Baggage**

Just because your bags disappear down the conveyor belt at the check-in is certainly no guarantee they will meet you at the other end.

No worry. Should your baggage not turn up at your destination airport within six hours of your arrival, you can charge up to £75 for replacement necessities, and Diners Club will credit your account.

If no baggage arrives within 48

hours of your arrival you can charge another £175.

If your baggage is damaged or lost during any journey overseas it's covered up to £1,500.

**International**

The Diners Club Insurance covers a lot more than just baggage and flight delays.

Happily there is no shortage of places to use your Card should you unhappily have to claim. Over half a million establishments in over 160 countries accept the Diners Club Card.

And Diners Club offers many more benefits than insurance.

If you travel the world on business, make it your business to find out exactly how much more by posting the coupon below.

\*For full details see Certificates of Insurance.

16:04



**Diners means business.**

For full details of becoming a Diners Club Cardholder, send to Diners Club Ltd., 26 St. James's Sq., London SW1Y 4JX, or more simply, telephone (01) 930 2755.

Name \_\_\_\_\_

Home address \_\_\_\_\_

Home telephone \_\_\_\_\_

Business telephone \_\_\_\_\_

CAD



# A YEAR OF ACHIEVEMENT AND PROMISE.

“Everything we do has to be paid for. The money has to be raised by our own efforts - every penny of it. We get no State aid whatever, and depend entirely on the support and generosity of the public.”

*Angus Ogilvy.*  
PRESIDENT

## DAVID INNES WILLIAMS - CHAIRMAN OF COUNCIL REPORTS SIGNIFICANT ADVANCES.

The year 1982/83 has been an active and successful one for ICRF, a year both of achievement and promise. We have been able to present significant advances in our understanding of cancer, as well as in the prospect of cure, and we have had the opportunity, through the generosity of our benefactors, to initiate some very important new projects, which we can confidently predict will bear fruit in years to come.

### NEW LABORATORIES.

Our major building project, the new laboratory at Clare Hall, South Mimms, is proceeding apace: the first phase will be ready for commissioning in September 1984 and plans for the scientific work to be undertaken there are well advanced, complementing the research carried on in Lincoln's Inn Fields.

Last year I was able to announce our intention to open a new unit in the Dominion House Laboratories at St. Bartholomew's Hospital to study viral and cellular oncogenes. This is now fully operational and holds great promise.

### CLINICAL RESEARCH.

The Breast Unit at Guy's Hospital has always been amongst our most successful ventures. Initially concerned essentially with surgery and radiotherapy, the unit has also included medical oncologists whose interests have widened to include cancer in other sites as well as leukaemia. We have now decided therefore that the time has come to put the whole of cancer research in Guy's on a sound footing, as part of the Medical School, as well as in the Hospital.

Accordingly, we are devoting a large sum of money to the endowment of a Professorial Chair of Oncology, which will be concerned with research into the medical and radiotherapeutic control of cancer as well as incorporating the surgical work already undertaken in the Breast Unit.

Colo-rectal cancer is almost as common as breast cancer, and we have always felt the need to extend our research endeavour into this area.

St. Mark's Hospital for Rectal Disease has long

been recognised internationally as a centre of surgical advance, and we are now able to set up an ICRF research unit there, based on the already well established Departments of Surgery and Pathology.

Of particular interest to our investigators is the hereditary element found in some cancers of the bowel. The unit will inevitably be small compared with the Breast Unit for some time to come, but we will hope to see it develop.

Our close proximity to the Royal College of Surgeons has not always been exploited to the full. Now, however, we are embarking on a joint venture in the field of histopathology, once the starting-point of most cancer studies but now sometimes pushed into the background by other expanding disciplines.

We are setting up a shared facility which will offer a reference service for rare and obscure tumours as well as providing a spring board for the research applications of new methods of investigation.

### SIR THOMAS GORE BROWNE - TREASURER COMMENTS:

The restoration of our finances to a more acceptable balance between Income and Expenditure which occurred last year, has enabled us to review and plan the implementation of a number of new projects, and some of those which had been temporarily deferred.

The Council of The Fund have now approved plans for expansion which will require capital expenditure in the order of £6.25 million over the next three years and which will ultimately add £1 million to our annual expenditure.

These include the construction of an additional laboratory block at South Mimms at a cost of £2.5 million, the endowment of a Professorial Oncology Unit at Guy's Hospital School for £2 million, the establishment of Units within St. Mark's Hospital and The Royal College of Surgeons £435,000, and further development of our site in Lincoln's Inn Fields which will amount to £1 million.

That we have had a successful year is made clear not only by a 17% rise in our total income from £18.8 to £22 million but by the very positive response that we have received from the public to our new advertising campaign.

The decision to invest substantial resources in developments and projects which could require a lifetime of financial support is a fine judgement given the inevitable uncertainty of our source of funds. We spent £15.6 million in the year under review

and our recurrent expenditure will rise dramatically over the next two years.

It is only through careful planning that we can now undertake capital expenditure of £6.25 million.

### CHARITY ACCOUNTS.

There has been much debate both within the media and the accountancy profession concerning standards of charity reporting. The Accounting Standards Committee of the Institute of Chartered Accountants in England and Wales is due to publish its recommendations shortly. It has always been our policy to present our Annual Report and Accounts in as clear and concise a manner as possible whilst trying to ensure that the donor is presented with sufficient information to evaluate the worth of his support.

In conclusion, we can justly claim that our Appeals expenditure, which this year is 5.1p of every £ received, is as low as any in the charitable field.

This is, in no small measure, due to the unceasing efforts of so many unpaid supporters and helpers in the country to whom I offer my sincerest thanks.

### DR. W.F. BODNER - DIRECTOR OF RESEARCH.

In his statement to the Governors, Dr. W.F. Bodner, FRS, Director of Research sets out the extensive nature of studies undertaken in the main laboratories.

He explains that the work of a cancer research institute must range from quite fundamental studies on the way that genes work, using the most appropriate model system whether it be a bacterium or a human cell, to applied studies such as on the relationship between diet and cancer, or on the best combination of drugs to use for chemotherapy.

Dr. Bodner believes that ICRF must always seek to maintain a balance of work in different areas, feeding the applied end with fundamental advances, while maintaining momentum at the forefront of applications. For example, a major aim for improving the treatment of cancer is to find ways of attacking the cancer cell more specifically, without damaging normal tissue to anything like the same extent.

One way to do this is to attach a poison to a monoclonal antibody that reacts specifically with cancer tissue and hardly at all with normal tissue, and these systems are being made to work in the laboratory. The challenge now is to make this approach useful in the clinic.

One of the striking features of present day cancer research is the way that modern understanding and ability to manipulate cells, their genes and their products has made the relationship between fundamental and applied research closer than ever before. It is also essential that cancer research takes advantage of modern technology; a genetic engineering laboratory for example is incomplete without direct access to computing facilities.

Concluding with a tribute to the public whose generosity sustains us, he confidently reports progress in all these areas with a conviction that ICRF is in a position to seek new opportunities and challenges to further our research into the causes, prevention and cure of cancer.

## UK NEWS

David Helliier looks at the Zola Budd case

### Athlete takes the fast lane to British citizenship

THE DECISION to grant British citizenship to Miss Zola Budd, the 17-year-old South African athlete, within 10 days of her applying for it, highlights the arbitrary way the 1981 British Nationality Act can be used.

More than 82,000 people acquired citizenship of the UK and Colonies in 1982, the latest figure available. Most of those applications would have been processed in one to three years.

In a House of Commons reply last November, Mr David Waddington, Home Office Minister, said that when there was an entitlement to citizenship, the average time taken to process applications was 18 months. For those which were discretionary, the time taken was rather longer, on average, 21 months.

In the House of Commons last week Mrs Margaret Thatcher, Prime Minister, replied to Labour opposition complaints that the Government had unfairly given preferential treatment to Miss Budd. She said the applications had been processed with speed so that Miss Budd could be considered for the British athletics team for the Los Angeles Olympics.

Miss Budd's application was granted under Section 3 (1) of the Nationality Act, which allows the Home Secretary discretion to give

Zola Budd won her first race in Britain at the weekend, setting a UK junior 3,000-metre record of 9 minutes 02.6 seconds at an event in Kent.

nationality to minors, irrespective of where they were born or the nationality of their parents or grandparents.

Normally, the procedure for a minor applying for citizenship would be a long one, although somewhat shorter than that for adults. Several things would need to be taken into account, including evidence of good character, residence applications and a knowledge of English. Another important factor would be whether the applicant intended to live permanently in Britain.

Police would normally take about three months to decide on character, for example.

Mr David Stephen, the director of the UK Immigration Advisory Service, said that under any other sections of the Act, apart from 3 (1), Miss Budd normally would have had her application refused.

For example, under section 3 (3) of the Act, an application could be refused if the number of days on which the parent in question was absent from the UK exceeded 270 during an arbitrary period of three

years ending with a date not later than the child's date of birth.

In Miss Budd's case, although her father is British by descent, he has not lived in Britain and would therefore not satisfy section 3 (3).

The 1981 Act also stripped minors born in the UK of their automatic right to citizenship, although here too a certain amount of discretion can be invoked.

Someone who does not qualify for automatic entitlement may still be entitled to citizenship so long as during each of the first 10 years of that person's life, the number of days on which they were absent from the UK did not exceed 90.

Under section 1 (7), however, the Home Secretary may consider applicants irrespective of whether they have fulfilled the above requirements, if he thinks fit.

Apart from the fact that Miss Budd's application had to be processed quickly if she were to stand a chance of running for Britain in the Olympics, it also had to be done before her 18th birthday, which is next month.

Miss Fiona Mactaggart, general secretary of the Joint Council for the Welfare of Immigrants, said she was annoyed because the Home Office had shown favour to an athlete above thousands of people whom she felt had more deserving cases.

### Brokers see gains for economy

BY PHILIP STEPHENS

THE PROSPECT that further strong productivity gains might continue to put downward pressure on inflation lay behind the Government's decision to stimulate the economy in last month's budget, stockbroker Phillips & Drew said today.

In its latest review of the outlook for the economy the broker said

that all the signs pointed to the rapid pace of productivity growth being maintained. Productivity in manufacturing had risen by an average 6 per cent a year since the beginning of 1983.

The perception that much of this represented a structural change in the economy rather than simply a cyclical upturn had allowed the

Government to take a more relaxed view of inflation prospects.

While average earnings growth was still fairly buoyant, better productivity would continue to limit the cost pressures on business.

At the same time, however, improved efficiency required higher growth in the economy for any given level of unemployment.

## IMPERIAL CANCER RESEARCH FUND.

**Scandinavian Finance B.V.**  
*(Incorporated in the Netherlands with limited liability)*

**U.S.\$60,000,000**  
**Floating Rate Serial Notes due 1993**

Guaranteed on a subordinated basis by

**Scandinavian Bank Limited**  
*(Incorporated in England with limited liability)*

For the six months  
13th April, 1984 to 15th October, 1984

In accordance with the provisions of the Notes, notice is hereby given that the rate of interest has been fixed at 11% per cent and that the interest payable on the relevant interest payment date, 15th October, 1984 against Coupon No. 3 will be US\$584.55 per note.

Agent Bank:  
Morgan Guaranty Trust Company of New York  
London

Some people buy Florida real estate to hold for the future others buy to enjoy it now.

Whether you are thinking of Florida for your future — Or as a place to live now, The Deltona Corporation can tailor a real estate plan to suit your needs.

**Condominiums on the beach —**  
Single-family homes on wooded horseraces, an apartment for vacations or land to hold for the future are all a part of Deltona's offerings. And, you can choose from several rapidly growing areas in Florida with prices from \$6,995 to \$300,000, with excellent financing available.

**The Mackle family —**  
Who heads the 300 million dollar Deltona Corporation have over 75 years of building and real estate experience. They are known the world over for their high degree of integrity and for helping others achieve their Florida dream.

**If you have ever thought about living in Florida —**  
Or sharing in its phenomenal growth then be sure to contact The Deltona Corporation. They have opportunities that may be beneficial to you. Send for brochures and details today.

**The Deltona Corporation**  
2250 S.W. Third Avenue, Miami, Florida 33129

Yes, I'm interested in Florida real estate opportunities. Send me information on:

Resort Condominiums  Single-family Homes

Vacation Opportunities  Horseraces (Land)

Name \_\_\_\_\_ Country \_\_\_\_\_ Code \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Telephone \_\_\_\_\_

**Deltona**  
Member, New York Stock Exchange.

Under the Privacy Statement adopted by Federal law and a similar statute regarding the protection of individual information, the information you provide will be used only for the purposes stated above.

Swindon provides low costs and high efficiency. One of the strongest economies in the EEC, it provides a compatible environment for sophisticated operations. With high quality business parks; at the centre of the Western Corridor; only an hour to Heathrow by road and 50 minutes to London by train. Get the Fact File now. Contact Douglas Smith, Industrial Adviser, Civic Offices, Swindon.

Telephone: (0793) 26161 or Telex: 444449

**JOIN THE SWINDON ENTERPRISE**

## Air Canada - the best short-haul airline in Europe.

AIR CANADA 84 points  
FINNAIR 72 points  
IBERIA 62 points  
SAS 60 points  
OLYMPIC 59 points  
BRITISH CALEDONIAN 57 points  
AER LINGUS 57 points  
ALITALIA 55 points  
SABENA 53 points  
SWISSAIR 51 points  
BRITISH AIRWAYS 47 points

The 1984 'Executive Travel' Short Haul Business Class Survey rated Air Canada's Intercontinental Executive Class service the best by a long way. It scored an amazing 84 points out of a possible 100.

Fly Air Canada from Heathrow to Dusseldorf and you'll see why. Our seats in the exclusive Intercontinental Executive Class cabin are so big other airlines use them in First Class. We serve a proper hot breakfast and provide in-flight entertainment. And if that wasn't enough, we're first out from Heathrow on most business days. Air Canada to Dusseldorf... nobody comes close.

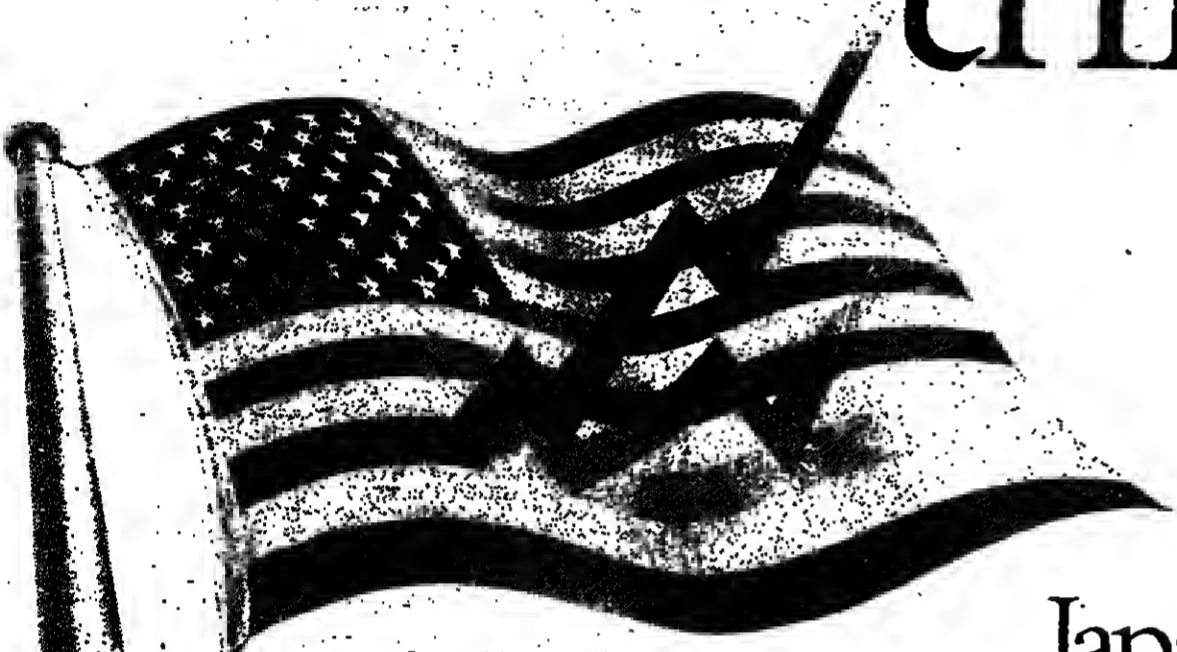
For further details see your travel agent or ring Air Canada direct on: 01-759 2636, 021-643 9807, or 041-322 1511.

**Flights so good, you won't want to get off.**

**AIR CANADA Intercontinental**

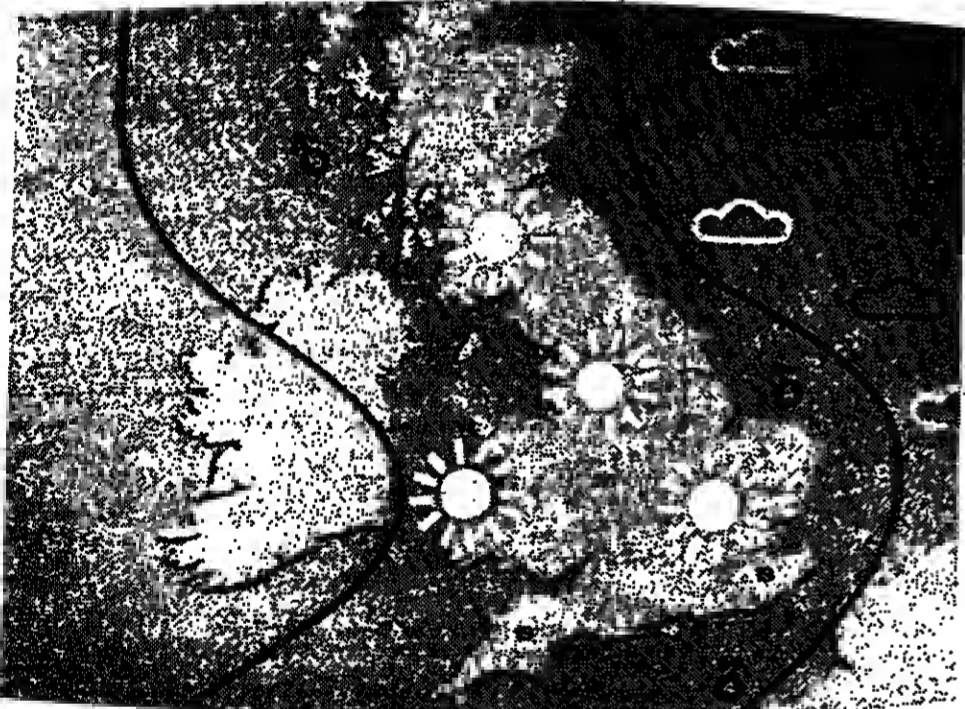


# Four fresh views of the world that could improve your fortunes this year.



**US** Interest rates have not impeded recovery, but have constrained inflation, leaving the free minded investor with a great opportunity to buy earnings and assets at low prices. With our connections and experience in the US we can take full advantage of this to provide a rewarding vehicle for capital gain through investment.  
**PHILIP EHRMANN, US SPECIAL FEATURES FUND MANAGER.**

**Japan** Japan seems set for an explosion. Look for the best returns in domestic growth rather than traditional export sectors. The best performance will be achieved by ranging widely across the market. We're ideally placed to do just that: we have on-the-ground experience and personnel in Japan that no-one can beat.  
**STEPHEN BARBER, JAPAN PERFORMANCE FUND MANAGER.**



**UK** Contrary to the prevailing caution about the economic recovery, the outlook looks very bright indeed for well managed, vigorous companies in certain sectors. We watch them closely and have developed a distinct flair for finding the market features ahead of the competition. And we're not afraid to realise profits.  
**PAUL HILTON, UK MARKET FEATURES FUND MANAGER.**



**Gold** Gold looks set to go up. And remember, gold shares considerably outperform a rising gold price. We are very well placed to make the most of this with our broad experience of investing in gold shares, not only in South Africa, but also in more specialist areas of North America and Australia.  
**NIGEL HALE, GOLD & PRECIOUS METALS FUND MANAGER.**

Above are the informed opinions of four fund managers of the newly established Montagu Unit Trust Managers Ltd.

Each opinion is backed by a wealth of individual experience, proven flair and a fresh, enthusiastic approach to the market.

That is why the managers were chosen. For there is no point in launching a new Unit Trust company unless you have a new view to offer. And a conviction that you can consistently produce a better return for your clients than the competition.

We have that conviction. But it is not only based on the skill and experience of the fund managers.

It comes also from the knowledge that the new Funds have behind them the enormous resources and consistent success of Montagu Investment Management Ltd. As well as the solidity of one of Britain's oldest and

most respected merchant banks, Samuel Montagu. Naturally, those deep resources defined the first funds.

Montagu has, for example, been one of the most respected names in the Gold market for over a century; the perfect platform for a fresh, enthusiastic team to build an aggressive winning Fund.

The association with Japan similarly goes back a long time and today we have a higher representation in Japan than almost any other financial house in Britain.

Montagu Investment Management has also been

managing money in the US for many years and has invaluable links with the largest quoted American Insurance Company.

While in the UK Montagu's connection with growing and successful companies in every industrial sector is almost as old as the bank itself.

Each fund will have its own personality and its own investment policy. But they all share a common philosophy: the funds must be as free ranging and flexible as they need to be to maximise investment opportunities for their clients.

And as anyone in the City will tell you, you cannot range freely or be flexible unless you have that solid base of knowledge and intuition that Montagu Unit Trust Managers Ltd. possesses.

Write to us and we will send you full details on the new funds.

Or phone Bill Ramsbotham on 01-626 3434.



A subsidiary of  
Montagu Investment Management Limited.



# Lords reverse extradition treaty practice

FOR AS LONG as any practising lawyer can recall it has been the practice of governments with which Britain has treaties of extradition, when requesting this country to surrender a fugitive criminal to stand his trial abroad, to call expert evidence on the applicable foreign penal law.

The Bow Street magistrate, who initially has to determine whether the fugitive criminal should be surrendered, has had to have an expert in the relevant foreign law sitting at his elbow to guide him through the thickets of an alien legal system. Such expert evidence has been necessary to prove that what the fugitive criminal is accused of having done in the foreign country is not only criminal according to its own law but also a crime that is substantially similar in one or more of the extraditable crimes listed in the Extradition Act 1870, as amended from time to time by subsequent treaties.

## Exception

In future, following a House of Lords decision last week, it will only be necessary for the Bow Street magistrate to have regard for foreign law if the treaty of extradition or any supplementary treaty adds to the list of extraditable crimes in qualified terms.

Treaties often specify that extradition may be granted for any other crime recognised by

the laws of both the requesting country and the returning country. Double criminality, as it is called, is then specifically applicable.

This exception apart, in the ordinary case of a fugitive criminal accused of an extraditable crime the magistrate in London is unconcerned with what provision of foreign criminal law is stated in the warrant to be the offence of which the person is suspected and for which his arrest has been ordered in the foreign state. The magistrate's sole function is to hear the evidence which is adduced in respect of the English extraditable crime and deal with it as if he were hearing a case for committal for trial in the crown courts of England.

That is the essence of the Lords decision last week in *Re Nielsen*, which dramatically reverses an unbroken line of literally hundreds of thousands of extradition cases heard by Bow Street magistrates for more than a hundred years.

Mr Bonde Nielsen has been charged by the Danish authorities with fraudulently abusing his position as controlling shareholder of a Danish company to rescue another company under his control from severe financial difficulties. The means alleged to have been employed by Mr Nielsen were to cause the first company to purchase certain shares from the second at an inflated price and on onerous terms, the purchase price being nearly 100m Danish kroner (£7.25m).

Mr Nielsen then advanced

struggling company, without security, totalling about Dkr 13m. These loans, it is alleged, have not been repaid and the first company has lost the whole of the capital invested in the purchase of the shares.

Mr Nielsen was arrested on a warrant and accused of the crime in Denmark of "fraud by a director of a company." This was translated into English criminal law terminology as "obtaining property by deception." The Chief Metropolitan Magistrate heard evidence on Danish law and concluded that the Danish offence involved a narrower concept than was involved in any comparable English offence, and that since the offences under the two laws were not substantially similar he felt compelled to discharge Mr Nielsen as matters stood.

Subsequently the High Court reversed the Magistrate's decision, and that has now been upheld by the House of Lords. The case goes back to Bow Street for the magistrates to continue bearing the unfinished evidence which the Danish Government wishes to produce.

## Acquittal

How does this reversal of a long-standing and invariable practice affect the process of extradition? Suppose some individuals entered a public office in the capital city of Ruritania by producing a valid pass, but then proceeded to steal some confidential documents. Ruritania law has a crime of burglary but entry to the place burgled does not have

to be by way of trespass. Under English law entry as a trespasser is an essential ingredient of the crime of burglary.

Even if the laws of Ruritania and England on the crime of burglary were sufficiently similar so as to comply with the pre-Nielsen law, from now on the law of burglary in Ruritania would be irrelevant; the English magistrate would be wholly unconcerned with the fact that the suspected burglars might be returned to Ruritania and be convicted of the crime without the Ruritanian prosecution having to establish that they were trespassers. If they were to be tried in England, the failure to establish that they had entered premises as trespassers would mean an acquittal.

Take a more extreme example of a charge of murder in Ruritania. If applications were made for the criminal's return from England, the Ruritanian authorities could get their man so long as they could persuade the English authorities that any other extraditable offence—such as theft—had *prima facie* been committed. The fact that there was insufficient evidence to convict for murder under Ruritanian or English law would not prevent the fugitive criminal from being returned to face his trial for murder, so long as the request was for him to stand trial for murder.

The general principle of international law is that in all cases of extradition the deed done, on account of which extradition is demanded must be considered a crime by the laws of both requesting and

returning state. Absolute identity of the two laws is not required. The essential character of the deed must be the same and made criminal by both laws. Nielsen's case has swept away that general proposition which will apply in the future only where the relevant extradition treaty specifically qualifies the exclusive regard by English law. English municipal law rejects the international law doctrine.

## Revision

No one nowadays believes that the courts do not make, but only declare the law. But if judges are bound to develop and even change the law they are usually careful not to turn themselves into legislators. Where everyone had proceeded for decades on the assumption that the law was X (even if it was erroneous) it is surely a matter for parliament to consider and if necessary to effect any change.

Extradition law, which has not been altered materially since the 1870 Act, is in need of urgent revision. Two years ago a Home Office working party produced a detailed report, pointing up some of the defects. There is also a European Convention, to which this country is not a party. The public concern aroused by the House of Lords' decision in the Nielsen case should at least stimulate debate if not actually provoke parliament to act.

*Times Law Report, April 13 1984.*

Justinian

# Rise in underwriting losses last year offset by more investment

BY ERIC SHORT

THE MAJOR quoted British insurance groups have now all reported their general insurance results for last year. The predictions early in 1983 that it was going to be an even worse year than 1982 have been borne out, even though there were relatively few natural catastrophes.

However, the deteriorating worldwide underwriting losses were more than covered by an improvement in investment income, in sterling terms, and higher life profits. The overall result was that net profits for 10 major companies showed a 15 per cent increase, with shareholders getting a 14 per cent rise on average in their 1983 dividend payments.

The table shows the aggregate results for last year of these 10 groups—Commercial Union, Eagle Star, General Accident, Guardian Royal Exchange, Legal and General, Pearl, Phoenix, Prudential Corporation, Royal Insurance and Sun Alliance.

Overall underwriting losses rose 9 per cent from £950m to £1,040m, the main contributors to these losses coming from Britain and the U.S.

The U.S. has been a poor insurance market for the past few years and conditions have been getting steadily worse. Overall underwriting losses have risen from £362m to £491m, with the Commercial Union contributing £245m. Trading conditions remained

## AGGREGATE RESULTS FOR THE 10 MAJOR UK INSURANCE GROUPS

	1983 £m	1982 £m	Change %
Underwriting			
UK	-274.6	-314.7	-12.1
U.S.	-490.9	-362.4	+35.5
Canada	-35.3	-48.5	-27.0
Australia	-18.3	-29.3	-37.5
Europe	-70.9	-62.4	+13.6
Rest of the world	-145.8	-127.1	+14.7
Investment income	1,415.3	1,274.2	+10.9
Life profits	253.2	215.2	+17.7
Net profits	442.4	383.3	+15.4
Average dividend increase			+14.0

The aggregate results of Commercial Union, Eagle Star, GA, GRE, L and G, Pearl, Phoenix, Pru, Royal and Sun Alliance.

Source: Wood Mackenzie

difficult throughout the year in the U.S. with keen competition leading to inadequate rates and rising underwriting losses. Hurricanes Alicia caused considerable losses for some of the insurance groups operating in the U.S. and the severe December weather resulted in even heavier losses for all.

British insurance companies in the U.S. have been looking carefully at their operations. They have increased premium rates, even if this meant losing market share.

The British result was disappointing for the insurance companies considering that the winter of 1982 was one of the severest in memory.

The reduction in underwriting losses from £314.7m to £274.6m only underlines the basic weakness in the British insurance markets.

The better weather last year meant domestic household buildings accounts showed sharp reductions in underwriting losses, but the dry summer caused an outbreak of subsidence claims towards the end of the year.

However, this improvement was offset to a large extent by the continuing rise in theft claims. Insurance companies paid out more than £200m of theft claims from homes and of personal belongings—a quarter more than in 1982.

Insurance companies operating in Britain have been com-

peting keenly for private motor business for the past three years. The effects of this competition emerged last year as underwriting losses climbed steadily. The situation was exacerbated by a rise in the frequency of claims.

Fire damage, excluding the insured £165m fire at the Royal Ordnance depot at Donnington in Shropshire, was little different from that of 1982. But commercial property accounts in Britain are suffering from competition and inadequate rates, so the stability of fire losses was welcome.

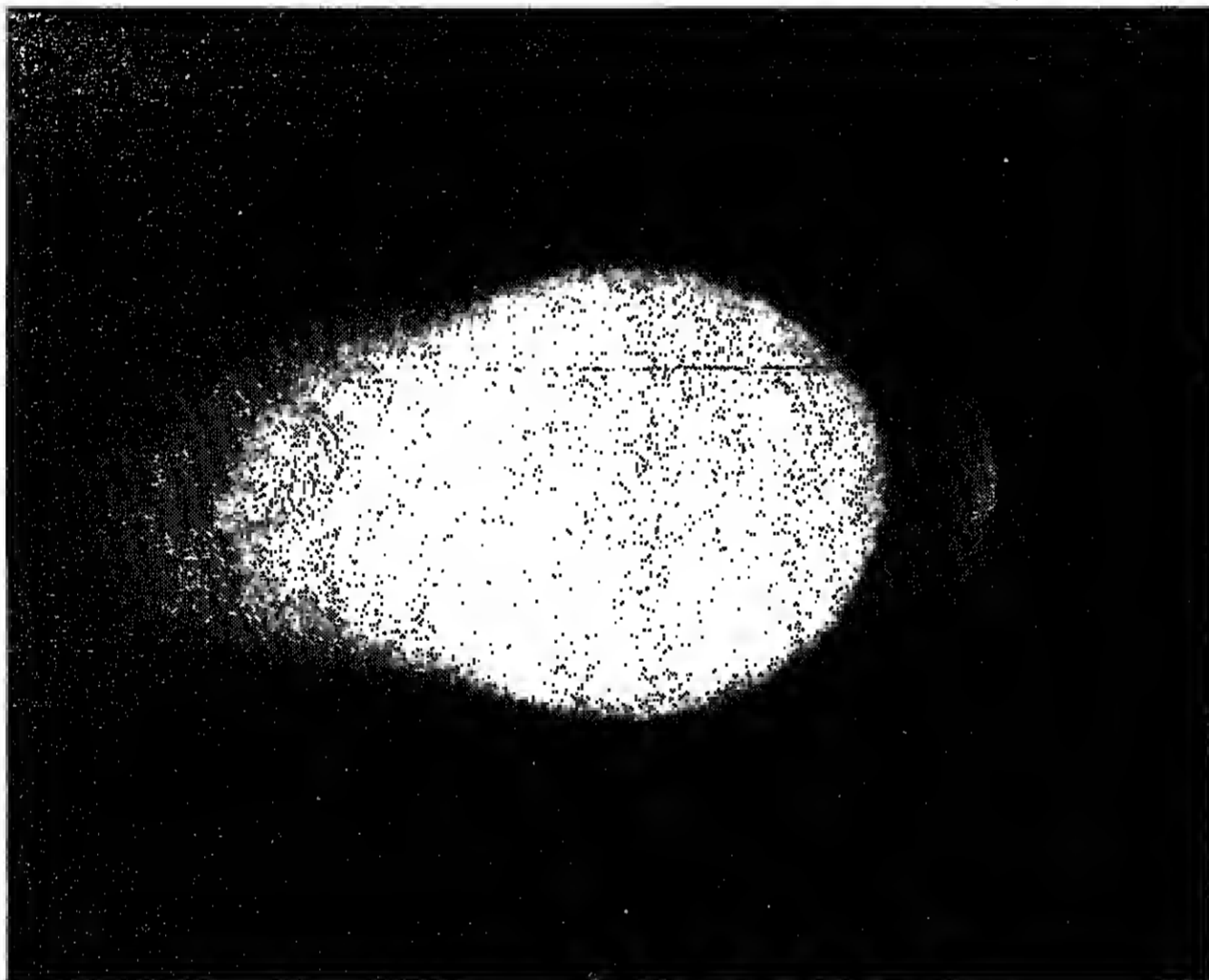
However, there were signs that companies were not prepared to cut premium rates further to keep business.

Canada showed a useful recovery in reducing losses. But the recovery stopped in the fourth quarter, as insurance companies in that country took advantage of improved conditions to start cutting premium rates again to increase market share.

Australia showed a steady recovery in spite of big bush fires in Victoria and South Australia early in the year. Insurance companies are hopeful that the recovery in Australia is more permanent than in Canada.

European results were mixed. Some countries showed improvements, but conditions in others worsened.

A revolution in the analysis of metals: inductively coupled plasma source (I.C.P.) spectrometry.



# AT PECHINEY, WE'RE NARROWING TECHNOLOGICAL BOUNDARIES. AND WIDENING OUR TECHNOLOGICAL LEAD.

Pechiney is back. The new Pechiney. With a new commitment to excellence and profitability—we've been back in the black since the end of 1983. And with the means—and the strategy—to achieve both. We've regrouped. We've streamlined our structure worldwide by divesting our uneconomical operations in steel and chemicals. And we're concentrating our efforts and resources on doing the things we do best. Pechiney's traditional activities with a proven track record in generating profits: Aluminium. Specialty metals. New and emerging technologies. International commerce and trading. We've modernized our aluminium operations throughout the world. And in New South Wales (Australia), Quebec and France we're constructing the most technologically advanced production plants ever built. Multimillion-dollar investments strategically located to benefit from cheap and plentiful electricity and whose advanced design means they'll consume less of it than any competitive plant anywhere. With a host of exciting and innovative new products under development, we're also strategically positioned to benefit from the worldwide shift to products that are lighter, more

heat and corrosion resistant and—a familiar refrain—are more energy efficient. At Pechiney the traditional boundaries between materials are disappearing and new very advanced material technology emerging. Like composites. Technical ceramics. Powder metallurgy. Plasma coatings. Aluminium/lithium alloys. And electronic copper alloys. The material technology of the future. Pechiney's future. As for our international commerce and trading operations, with fifty companies present in sixty-five countries, here too Pechiney is active. Ready to take on the competition worldwide.

**PECHINEY**

23, RUE BALZAC-75008 PARIS FRANCE  
TEL. (1) 561 61 61

MATERIAL TECHNOLOGY'S NEW FRONT RUNNER

## BUSINESSMAN'S DIARY

### UK TRADE FAIRS AND EXHIBITIONS

- April 16-18 Solids Handling Exhibition—SOLIDEX (Oxford) (0895) 89431
- May 1-3 AIE Electronics ECIF Show (0799 26689) Barbican
- May 1-5 Fibre Optics Exhibition and Conference (0799 20899) Whitbread Porter Tea Rooms
- May 1-3 International Air Cargo Exhibition and Conference (St Albans) (0727) 88633
- May 2-Oct 21 International Garden Festival (051-236 9090) Liverpool
- May 3-11 Southern Aids for the Disabled Exhibition and Conference (Tunbridge Wells) (0882) 44027
- May 14-15 British Craft Trade Fair (0283 65912) Harrogate
- May 15-17 Micrographics '84 Exhibition and Conference (Godalming) (04868) 6653
- Bloomsbury Crest Hotel, WCL
- May 15-17 DEG User Show (01-837 8699) Casuar International Hotel, W6
- May 20-22 Business to Business Exhibition (01-729 0677) Barbican
- May 21-25 International Fire Safety Conference and Exhibition (01-248 4477) NEC, Birmingham
- May 22-24 Ribe computer exhibition and conference (01-837 8691) Bloomsbury Crest Hotel
- May 23-25 Chelsea Flower Show (01-834 4833) Royal Hospital, SW3

### OVERSEAS TRADE FAIRS

- Current Milan International Trade Fair (01-837 3153) (until April 23) Milan
- April 16-19 European Trade Fair for Technicians and Organisation in Banking (Luxembourg 2 09 31) Milan
- April 24-27 Food and Hotel Asia (01-496 1951) Singapore
- April 29-May 4 Direct Marketing Symposium and Exhibition (01-938 48 29) Montreal
- May 5-9 Systems Components and Materials for Industrialised Building Sector Exhibition (01-436 1851) Milan
- May 10-13 Asian Automotive and Accessories Exhibition (Gulfidford) (0493) 36095
- May 10-16 International Packaging Exhibition and Display of Confectionery Machinery—INTERPACK (01-493 3883) Dusseldorf
- May 20-27 International Aerospace Exhibition (01-531 2191) Hanover
- May 22-25 Asian International Electronic Communications Exhibition and Conference—COMMUNICASIA (01-493 1851) Singapore

### BUSINESS CONFERENCES

- April 18 Longman Seminars: Furnish v Dawson—the Implications (01-242 2548) Barbican
- April 23-27 Insignia and computers (1) 793.014 Paris
- April 25-26 Progress Foundation / IMF Money—a search for common ground (0891) 65 02 69) Lugano, Switzerland
- May 3 Institute of Directors: New legislative threats to directors (01-388 1811) Cafe-Royal, WI
- May 3-4 FT/24 Banker: World gold conference (01-621 1255) Hong Kong, Jan (01-242 2548) Barbican
- May 4 Longman Seminars: The electronic banking revolution—legal and security problems (01-242 2548) Barbican
- May 10 IWP: Electronic mail in practice (01-242 9927) Lavalin Conference Centre
- May 11 Longman Seminars: The Lloyd's FT Conference: Ship—World FT Act (01-242 2548) Barbican
- May 12-14 Mead: Law and business in the UAE (01-404 3533) Abu Dhabi
- May 15 Business Briefings: Acting for Lloyd's underwriters, taxation planning and advice (01-881 1264) Waldorf Hotel, WC2
- May 16 Institute of Marketing: Market Money—a search for common ground (06285) 24922) Royal Lancaster Hotel, W3
- May 16 Institution of Taxation: Finance Bill 1984 (01-235 8847) InterContinental Hotel, WI
- May 16 Longman Seminars/International Media Law: The media and the conference (01-242 2548) Barbican
- May 22 ESC: USM: listing or private planning? (Oxford) (0872) 822711) Piccadilly Hotel, WI
- May 23 Royal Institute of Navigation: Global vessel satellite navigation systems (01-589 5021) Newtel, W6
- May 23-24 Longman Seminars: The Lloyd's FT Conference: Ship—World FT Act (01-242 2548) Barbican

Anyone wishing to attend any of the above events is advised to telephone the organisers to ensure that there has been no change in the details published.



TECHNOLOGY

هكذا صنعنا

EDITED BY ALAN CANE

**FORTUNE SYSTEMS**  
To stay ahead we think ahead  
Market leaders in micro technology  
**01-741 5111**

DINOL IN SWEDEN AIMS TO PREVENT CORROSION BY AUTOMATION

**Rustproof care by robots**

BY JOHN GRIFFITHS

TECHNICIANS from a number of the world's motor manufacturers currently are beating a path to the town of Hasselholm, set deep in the countryside of southern Sweden.

It houses the production plant of Dinol International, the anti-corrosion subsidiary of Axcel Johnson, which, with an annual turnover of £3m, is Sweden's third largest industrial group after Volvo and Electrolux.

Within an unpretentious brick building, Dinol has set up what the company hopes will become a standard ingredient of vehicle assembly lines.

It is a fully robotic system for rustproofing vehicles, covering underbody, interior box sections, doors, and all other areas perceived to be vulnerable.

The system, developed by Dinol, but using robotics from Trafica, can handle an assembly line rate of up to 40 vehicles per hour, says technical director Mr John Paulsson. In line with the flexible manufacturing systems now becoming standardised in the motor industry, it is programmable to handle a variety of models coming down the same line.

The purpose behind Dinol's development of the system is two-fold: The bulk of its turnover (SKr 250m—about £23m—last year) comes from the supply of anti-corrosion chemicals to the motor and other industries—it is already involved in assembly line operations with manufacturers such as Audi, MAN and Volvo and to its 2,000 franchised aftermarket treatment centres spread around the world. Their wider use in full on-line robotic systems obviously stands to increase this turnover substantially: Dinol is forecasting SKr 750m within the next five years.

It would also distance the company yet further from the badly tarnished image which the vehicle rustproofing industry—at least in the after-market—has acquired, with considerable justification.

Throughout, the problem of "aftermarket" rustproofing—usually carried out by franchised outlets shortly after a car has been purchased—has been that there is no really effective way of knowing whether the process has been carried out properly.

Dinol itself will concede that while it runs a tight monitoring operation, with unannounced spot checks on its own Tuff-Kote Dinol franchisees, they can never be wholly effective against potential abuse.

Apart from potential malpractice, or sheer inefficiency of hand operators, the vulnerability of a car to corrosion increases sharply within weeks of leaving the production line, points out its managing director, Mr Lars Wisen.

As a half-way house between after-market and on-line operations, Dinol for some time has also been carrying out rust-proofing operations for importers of vehicles prior to their retail sale. Honda, Suzuki, Citroen and Alfa Romeo come into this category in the UK, for example.

Nevertheless, says Mr Wisen, the most effective anti-corrosion protection must come from applying it during the actual assembly process, by a robotic system which allows no room for operator error, and is backed by a manufacturer-supported retreatment programme at intervals.

Even then, he dismisses any prospect of such measures prolonging a vehicle's life indefinitely.

"At best, anti-corrosion measures can only delay the onset of rusting. To talk of corrosion-proofing is nonsense. One way or another, by force of nature, the steel in a car will revert to its natural state of ferrous oxide."

The effectiveness of the Dinol-developed system is attributed partly to the robotics, partly to the materials used. One of the biggest problems which has militated against on-line treatment, for example, is the unacceptable health hazards of open spraying several litres of solvent-based rustproofing chemical on to the complete, assembled vehicle underbody. Thus Dinol has developed a material which is sprayed on while hot. The supply tank, hoses and robot spray head are all heated to a temperature slightly above the material's setting point, within seconds of application it cools to its setting point, without drips and with no evaporation of hazardous solvents into the working environment.

Other compounds of differing characteristics are used for injection into box sections and other areas.

Mr Wisen points to four particular factors which, he thinks, are concentrating manufacturers' attention increasingly on corrosion retardation: the switch, now some years ago, to water-based paint systems for vehicles; the increasingly corrosive nature of the atmosphere—"acid rain" is a problem beginning to deeply worry much of Europe and Scandinavia—intensified use of road de-icing compounds and the major recent changes in car design.

In the last case, vehicle strength has become concentrated on the way in which the sheet steel is stamped and folded, which has allowed thinner steels to be used in pursuit of weight-saving. Implicit in this is that the integrity of the thinner steels is liable to be damaged much more quickly compared with earlier structures.

This has made the treatment of box section interiors even more crucial and manufacturers have adopted a number of processes such as pre-treatment of steels, cathodic dips and anti-corrosion material injection as preventive measures. For virtually all, however, the last process is operator dependent.

This key part of Dinol's robotic system, therefore, involves a computer-controlled injection module with a variable number of piston operated nozzles (20 on the demonstration system) injecting predetermined amounts of treatment material into each section. The system is pre-programmed for a particular model and has a recognition system for different vehicles moving down a multi-model line.

In developing it Dinol also claims to have come up with the answer to a previously baffling problem: while considerable amounts of material would be injected into sections, its distribution and the depth of coating—on subsequent inspection—would be much less than the amount injected. Dinol concluded, during three years of experiments, that conventional solvent-based materials caused a "washing tendency" and were subject to heavy evaporation, leading to a 60-80 per cent loss of the material injected. Thus the new materials being used with the robotic system have the wax-based in suspension rather solution.

Further, given that Dinol automatically takes apart all new models for treatment assessment, Mr Wisen suggests, controversially, that despite computer-aided design, not every manufacturer gets the vehicle right at the crucial design stage. "There are lots of good cars around; equally, we see some terrible solutions; cavities half-filled with foam, promoting corrosion, and front wing designs with virtually a built-in rust guarantee."

All of which sound like promotional hype, were he not for the depth of Dinol's experience in the industry. It has long been integral to the operations of Volvo, with whom it has co-operated for over 30 years. During this time Dinol has become

systems consultant, tool developer and product supplier to the car maker, with tanker trucks operating on a shuttle basis between Dinol's and Volvo's plants.

The automotive industry forms just a part of the company's anti-corrosion activities, however. They include aerospace and since 1982, it has been involved in collaboration with Lufthansa aimed at reducing corrosion-induced operating costs. According to Mr Harald Claassen, Lufthansa's chief systems engineer for aircraft structures, about 4,000 man-hours can now be saved on repairs during major overhaul every five years, apart from component savings.

A U.S. Congressional study in 1978 concluded that across all sectors of industry, only about 15 per cent of corrosion is preventable—a figure with which Dinol does not disagree. In monetary terms, however, this represents a startling amount: 4.2 per cent of GNP, or \$70bn, in the U.S., while latest government estimates in Sweden are of an annual cost of Kr 23bn (about £2bn).



Dinol cavity treatment by robot. The Trafica 4000 robot hits the target with a precision of less than 0.5 mm

The ability of a car to withstand corrosion increasingly has become a significant marketing plank for manufacturers and has led to an increasing number offering five or six year warranties. Mr Wisen says he believes that some, at least of them may be storing up trouble for themselves on the basis of present technologies and application techniques.

Further, given that Dinol automatically takes apart all new models for treatment assessment, Mr Wisen suggests, controversially, that despite computer-aided design, not every manufacturer gets the vehicle right at the crucial design stage. "There are lots of good cars around; equally, we see some terrible solutions; cavities half-filled with foam, promoting corrosion, and front wing designs with virtually a built-in rust guarantee."

All of which sound like promotional hype, were he not for the depth of Dinol's experience in the industry. It has long been integral to the operations of Volvo, with whom it has co-operated for over 30 years. During this time Dinol has become

Materials

**Plasma deposition**

RAPID solidification plasma deposition (RSPD) is a technique which allows high integrity metal parts to be made by a spraying process in partial vacuum. It is under development at General Electric of the U.S. in Schenectady, New York. A further \$3.5m is being pumped into the project by the U.S. Government following a promising year-long \$2m first phase in which scientists and engineers from GE and Drexler University are participating.

Parts are formed with a spray gun that ejects a stream of molten metal at a suitably shaped former. The stream solidifies immediately and is built up layer by layer to achieve the desired shape, size and thickness. The former is then etched or machined away, leaving the metal part.

Dr R. W. Schmitt, GE senior vice-president for corporate R and D, thinks the technique will rival powder metallurgy and casting. He said: "By eliminating the need for many casting, forging and machining operations, the spray-forming technique offers the potential for dramatically increased productivity and lower costs."

The high energy gun produces a stream of ionised gases (plasma) at 11,000 deg C into which any alloy in powder form can be injected. The particles are instantly melted and are propelled from the spray nozzle at about 500 miles/hour.

After a short flight time the liquid droplets hit the substrate and are quenched at nearly a million degrees per second. The entire process takes place in a low pressure chamber to prevent oxidation of the metal in the atmosphere oxygen.

The technique produces dense, small-grained structures "potentially having much higher tensile strength and thermal fatigue resistance than can be achieved with conventional methods."

Such properties are important for highly stressed jet engine components like turbine blades, which are exposed to hot gases. Stronger, less thermally-affected blades allow higher operating temperatures in the engine, so enhancing fuel economy and performance.

The research contract was placed by Wright Air Force Base, with the overall aim of fabricating a number of advance aircraft components. GE is on (518) 555 8515.

Cash registers

**Talking shop**

HUGIN CLAIMS to be first in Europe with a talking cash register—at a CWS Superstore in Inverness.

The system, called Post-talker, uses speech synthesis "chips" to generate verbalised prices for the customer—including all the numerals, and the words "pounds" and "pence." The digitised versions of the sounds are kept in a semiconductor store and are released according to instructions from a bar code reader.

Bar codes on purchased items are scanned by a laser scanner. The labels give the European Article Number code which specifies the type of product and the price. A loudspeaker in the till then utters the price.

The time taken for the system to read the bar code and speak the price for the customer is much less than the assistant keying all the data on a conventional cash register. More on 01-251 4161.

Software

**Financial analysis**

A COMPUTER program which is used for the analysis of municipal bond issues has been developed by E. A. Nicholson & Company in New York. The American company said that Humbird runs on the IBM range of personal computers. This product is the fourth in the series which structure and analyse municipal finance in the U.S. More information on (212) 889 7535.

**IBM PERSONAL COMPUTER NETWORKING**  
SALES SERVICE RENTALS DEMONSTRATIONS  
MERCHANT SYSTEMS LTD.  
5 NEW BRIDGE STREET EC4  
**01 583 6774**

Peripherals

**Epson printers**

EPSON OF Japan, the dominant force in printers for the professional personal computer (the IBM PC printer is in fact Epson's FX-80 in new livery) has launched two new printers which threaten to set new standards of price and performance in both the small business machine and home computing market sectors.

The P-40, aimed principally at the home and portable computer market, costs only £95 plus VAT. It measures only 4.6 cm by 21.6 cm by 12.8 cm and uses a thermal dot matrix mechanism: printing on thermal paper with friction feed.

The P-80 is a thermal transfer printer with true 80 column capacity which can use normal or thermal paper. It costs £160 plus VAT and prints at 45 characters a second.

Both printers are aimed at users with portable computers and run off batteries or mains electricity.

Epson also launched a colour printer, the JX-80 at £500 plus VAT and a colour plotter, the HI-50 at £400 plus VAT.

The JX-80 operates in monochrome mode unless instructed to print in any one of seven colours, produced through the use of a four colour cartridge ribbon.

All four printers will be available in the UK later in the year. More on 01-902 8892.



**WE'RE IN THE SYSTEMS BUSINESS. NOT JUST IN THE SYSTEM.**

Microprocessor technology has enabled manufacturers to make their computers smaller, more powerful and less expensive. And, since Intel invented the microprocessor, its hardly surprising that we're in the business of producing microprocessor-based systems which take advantage of that technology.

As evidence that we're into systems as well as components, take a look at our Supermicro system, the 286/310. We call it the Supermicro because it's based on our 286 microprocessor—the world's fastest Unix engine. It performs multi-user applications more like mini-computers costing ten times as much.

If you need a more complete solution, take a look at our software expertise. Intel's Database Information System (IDIS) lets your personal computer talk to your mainframe... and your mainframe talk back. And our integrated Transaction Processing System (TPS) can halve the time it takes to develop tailored application software.

Equally important, our open systems are built on industry standards.

So system configuration and upgrading could hardly be simpler. You'll be faster to market at lower cost. With less risk, too, because our architecture has already captured 70% of the 16-bit personal computer market—more software is written for our microprocessor family than any other in the world.

Last year, Intel's worldwide sales totalled over one billion dollars and a large chunk of that came from microprocessor-based systems. A third of our UK resources is devoted to software support, product service and customer training for builders and users of computer systems.

Surprised? You shouldn't be. After all, who knows more about computers than the people who first put one on a chip?

To find out how Intel's systems products can improve your business, ring Intel's Public Affairs Department on Swindon (0793) 488388 extension 3528, or complete the coupon.



Please send me: Intel Systems Information Pack  Intel's Annual Report 1983

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Position \_\_\_\_\_  
Address \_\_\_\_\_  
Post Code \_\_\_\_\_

FT16/4  
Public Affairs Dept., Intel Corporation (UK) Ltd., Pipers Way, Swindon, Wiltshire, SN3 1RJ.



## THE MANAGEMENT PAGE

EDITED BY CHRISTOPHER LORENZ

## The 'networker' moves on a step

Brian Groom reports on the emergence of the neighbourhood office

ROGER WALKER is getting used to being one of the world's leading guinea-pigs when it comes to finding new ways to work. After becoming Rank Xerox's first "networker" 2½ years ago, he is now experimenting with another aspect of the society of the future — the neighbourhood office.

Business colleagues, including other networkers, started informally last year to share the use of rooms in an old Georgian house in Stony Stratford, near Milton Keynes, from which Walker's expanding personnel consultancy operates. "Now I'm putting this on a more formal basis and RX will monitor it," he says.

Networking is the project run by Rank Xerox, the office equipment company, in which employees leave the staff and turn themselves into independent limited companies. They sell their services to Rank Xerox and other customers.

Rank Xerox's 45 networkers, whose businesses range from computing to financial control and marketing, keep in touch with the parent company via microcomputers with a telecommunications link. The project is one of the most sophisticated developments in "telecommuting" or "teleworking", using terminals to work at locations (usually people's homes) remote from employers.

Rank Xerox claims a fair degree of success for its networking experiment so far. A key aim was to save on things like rent, rates, heat, power, maintenance and security, which make up 31 per cent of central office costs. It has been able to save £1m a year by vacating its Cleveland Street building in London.

No networkers' businesses have failed. Some are expanding and taking on their own staff. Walker, aged 39, now has a business plan which envisages £150,000 net turnover in the coming year. He has three direct employees and, with his company acting as an employment agency, has five contract staff (secretaries and data punch operators) on secondment to other organisations.

Walker is enjoying himself, though he admits to having experienced "moments of fleeting terror" caused by the problems of keeping work and cash flow-

ing in a small business. This year he is trying to introduce more systematic methods of marketing to cope with the peaks and troughs.

Phil Judkins, manager of headquarters personnel and resources at Rank Xerox believes many companies will want to adopt arrangements like networking in the next two to five years, because of the falling cost of microcomputers, the high cost of central offices and greater personal motivation and achievement.

"They should start now," he says. Rank Xerox knows of 12 other companies which have recently started networking type projects. Networking has attracted huge interest in the press, and brought inquiries even from major Japanese companies.

**'No networkers have failed. Some are expanding and taking on staff.'**

One of the main potential problems of working from home is isolation—lack of contact with professional colleagues. Home-working also requires self-discipline so as to avoid distractions, though seeing more of the family is a compensating benefit.

Rank Xerox has taken steps to minimise isolation. Networkers are treated as the company's "extended family." Close contact is maintained, their names are kept on internal circulation lists and they are invited to departmental meetings. They can join Xanadu, the mutual support association of former employees who have left to start their own businesses (see accompanying article).

Now the company is trying out the "neighbourhood office"—the idea that people who work a long way from their various employers or customers can share office space in their home district, linked to their individual company headquarters by computer terminal.

This concept is aimed at providing mutual emotional support—sharing a cup of coffee

and advice when contracts are coming in slowly invariably helps.

The participants can also share the cost of secretarial services, and expensive items of information technology.

The idea is often discussed by academics, but there are few good practical examples. It is difficult to bring workers together organisationally unless they have some common link. A report by Rank Xerox's architectural consultants, Duffy Eley Giffone Worthington, on developments in Europe, shows the rarity of the advanced-technology neighbourhood office.

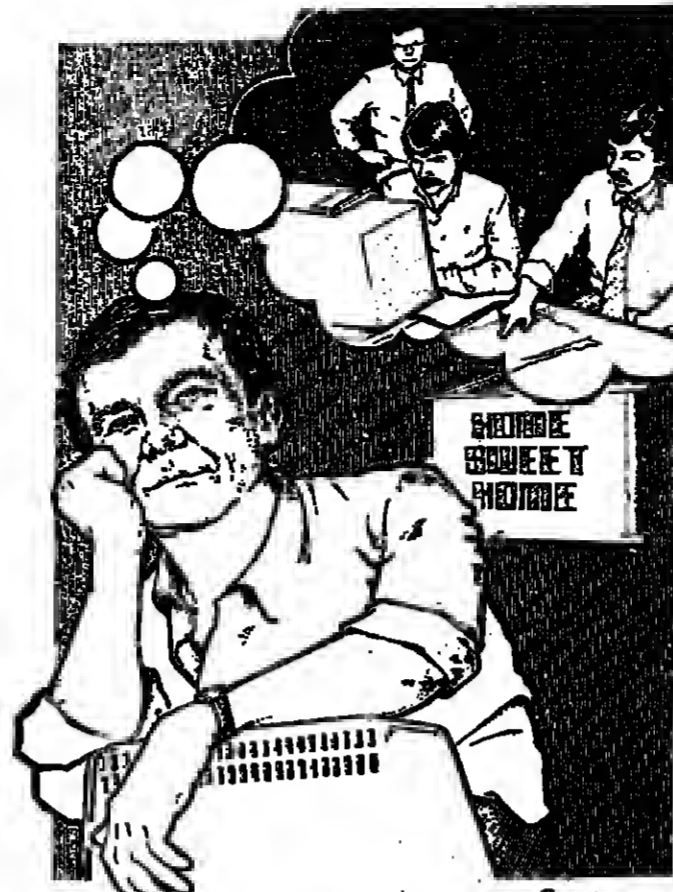
In France, the state telecommunications office, DGT, has sponsored neighbourhood centres but most have been very small-scale. A grand "tele-local" at Marais-la-Vallée, intended to house at least 100 workers from 15 organisations, has never got fully under way, partly because companies have been lukewarm.

The Swedes are running an experimental community work centre at Nykvarn, 40 miles outside Stockholm, to monitor the impact of working away from head office and the use of data transmission methods, and to identify workplace needs.

Some users feel that the need to keep conditions constant for purposes of academic research has hindered the government-supported centre's development. When research funding stops in the middle of this year, a resident business manager may be brought in to run it commercially. But its future remains uncertain.

Rank Xerox makes no grand claims for Roger Walker's experiment. Far from being a large, formal project involving many businesses, it is one man's premises being used informally by associates who drop in. Rank Xerox hopes that because it arose from a need, and because of the relationship between the users, it will succeed and grow naturally where more ambitious projects would fail.

Mostly the other users are people doing work for Walker, or putting work his way. Tesco, for instance, wanted someone to run a warehousing and distribution course. Walker picked up the business, and brought in



"One of the problems of working from home can be isolation"

a colleague to do the work for a fee.

What are the possible drawbacks of this kind of sharing? "You can sometimes let business interfere with relationships. It's extremely important to define contracts in detail at the outset to protect that relationship," says Walker.

The Stony Stratford office is equipped with two microcomputers—an RX 820 on loan and an Apple, with a printer which is also used as an electric typewriter—an acoustic data coupler, and an RX 1020 copier.

At home he has an RX 823 on loan. Walker does a third of his work at home, a third at clients' offices. Increased flexibility between home and office is one of the likeliest features of society's future working patterns.

Rank Xerox is considering a second experiment—this time monitoring a new networker who would move in with a group of established personnel consultants in a shared office. The company's overall aim is to examine the equipment needs of such offices, and watch how small businesses inter-

Their progress will be compared with similar developments like Xanadu's business support centres at Colnbrook near Slough, Tottenham Court Road in London, and a third one to be opened in Gloucester, where there are a number of ex-Rank employees. These provide temporary office hire, meeting rooms, word processing and clerical assistance.

Rank Xerox hopes that the neighbourhood office concept, like networking, will spread. But neither development will sweep through society's work patterns overnight. The bulk of people will work in traditional offices or factories for the foreseeable future. Networking is suited to professional work dealing with information, rather than process or manufacturing work.

The climate remains cold for leaving salary, company car, pension and secretary behind and setting up your own business, even with the help of an ex-gratia payment and preferential rates for office equipment. RX turns down half the people who apply to become networkers, and tries to select only the most resilient types.

## Xanadu

## Helping people avoid pitfalls

XANADU IS the mutual support organisation for former Rank Xerox employees including networkers who left their own businesses. It comprises 259 companies with £15m-£25m joint turnover and a total of 750 workers.

Founded in April 1982, its aims include exchange of business opportunities, information and services, group purchasing of things like private health care and life insurance, and providing a continued link with Rank Xerox.

It started when Rank Xerox, looking to reduce staff numbers, was thinking of "straightforward" redundancies. One solution was to offer substantial packages of assistance to volunteers who wanted to start a business.

Richard Coon, Rank Xerox's former financial controller for Eastern Europe, the company's second networker, left to become a business start-up consultant and specifically to establish a support programme for these leaving Rank Xerox.

This involved personal counselling and a one-week course, which included advice on how to put a business plan together. "That's where most people go wrong," says Coon. Everyone had to present his or her plans in front of other members of the group.

"It became clear that starting your own business never stopped. You go from one crisis to another. You need a continuing support association," Coon adds.

Xanadu was therefore born at a meeting at the White House, near Rank Xerox's Euston headquarters, in London. It had 60 members at first, and planned to meet regularly.

One of its first decisions was that it would not market the services of members, on the grounds that it was hard to market such a wide range of businesses as computer software and marketing consultants to bicycle hire in Scotland, sheep farming in Wales and a flower shop in Soho.

That decision has now been reversed, because members came to feel that business opportunities could be exploited. Two companies,

Xanadu Ltd and Xanadu Consultants Ltd have been set up to market members' services through mailing shots, advertising, and at exhibitions.

Xanadu has also started selling associate membership to companies outside the former Rank Xerox fold. They will get benefits such as courses and discounts, but will not be able to vote on strategy.

In spite of the national 33 per cent fall in rate for small businesses, Xanadu has so far had no collapses—though a couple of members have returned to employment after deciding that going-it-alone did not suit them. Coon accepts, however, that failures are bound to happen in the future.

## Office hotel

Some businesses are growing fast. Coon has set up a software company with two colleagues, called Peacom. It is launching a complete personnel management system for microcomputers, which it hopes will grow tenfold over three years to a turnover of more than £5m, and will then be launched on the Unlisted Securities Market.

Xanadu runs two business support centres offering office space, facilities and clerical assistance for hire, and is setting up a third. It is thinking of setting up an "office hotel," Xanadu House, available for short- or long-term hire on the north-western fringes of London.

The basic Xanadu subscription is £10 a year. Rank Xerox has helped out by paying bills up to a total of £16,000 in each of the first two years, and is assisting with premises and equipment for the support centres.

A number of other major companies have made approaches to Xanadu, seeking to know more so they can provide similar facilities for their own employees who may leave to set up their own businesses.

Networking was first described on this page on July 19 and 20, 1982.

## Business Travel

PAN AMERICAN is reintroducing its once popular last chance flight from London to New York. The 18.00 hours PA 103 from Heathrow to JFK was stopped in January after a wrangle with the UK Government. The flight is enthusiastically supported by passengers wanting to do a full day's work before leaving London and who do not mind the late night arrival in New York. Clipper and first class passengers get the use of Pan Am's New York lounge at Heathrow and limousine service into Manhattan after arrival.

THE CLUB system has spread to the cross-channel ferries. So many business travellers are now taking their own cars on business trips involving channel crossings that Townsend Thoresen is experimenting with club lounges. The first lounges are on the longer haul routes—Portsmouth to Cherbourg and Le Havre.

The lounges have steward service and offer free fruit juices, tea and coffee at breakfast time. The lounges cost £1 per seat on day sailings, £3 a seat on night crossings.

BRITAIN'S two major magazines for the business travelling community, Business Traveller and Executive Travel, are locked in a new marketing war. Both have now appointed publicists to drum up custom and the result could be great. More of those "airline of the year," "hotel of the year," "rental company of the year,"... surveys.

Executive Travel's latest excursion is into the field of Club Class on airlines. It emerges antagonistic. If you hold the view that Club class is as good as the seating space then the findings are revealing. The distance between seats, the crucial knee-room, tiny 32 ins on some short-haul Airbus, Aer Lingus and Iberia flights to a healthy 42 on some Thal, MAS and, oddly enough, Iberia trips. Several airlines offer only 17-inch seat widths, which means a three-person airplane seating but CFA manages 26.7 ins.

SAS HAS added Hertz to its computer reservations system, thus allowing direct access to the car rental company's worldwide computer network and providing simultaneous booking facilities for both flight and car.

Arthur Sandles

## INNOVATIVE PROBLEM SOLUTIONS THROUGH INFORMATION ON THE HIGHEST LEVEL

Invitation to the Exportforum at the Swiss Industries Fair in Basel May 5-14, 1984



Meet innovative Switzerland at the newly created Exportforum of the Swiss Industries Fair in Basel. Among the numerous exhibitors, you will find major Swiss groups known all over the world as well as many small and medium-sized firms specializing as ancillary suppliers. Presentations include integrated partial or total problem solutions adapted to the specific, individual requirements of clients from all over the world. Typical projects and proofs of performance will illustrate Swiss know-how, reliability, flexibility and attitude to quality.

A two-day symposium entitled "New Vistas for World Development through Technological Progress", the long-term effects of technological evolution on the world's economy will be discussed by eminent, internationally celebrated lecturers from the scientific, business, finance and political communities. The symposium will be held under the patronage of Dr. Kurt Furgler, Swiss Federal Councillor and Head of the Federal Department of Economic Affairs.

To receive details on the Swiss Exportforum, return the contact coupon or send us a telex. Exportforum, c/o Swiss Industries Fair, P.O. Box, CH-4021 Basel/Switzerland, telex: 62 685 fairs ch

## CONTACT COUPON

We wish to receive detailed information on Exportforum and the "New Vistas" symposium:

Name, company name and postal address:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please mail coupon to: Exportforum c/o Swiss Industries Fair P.O. Box CH-4021 Basel/Switzerland

## GOLD

It is proposed to publish a survey on the above subject on:

MONDAY  
APRIL 30

This will coincide with the F.T. International Gold Conference in Hong Kong

For further details and advertising rates please contact:

HUGH SUTTON  
Financial Times  
Bracken House  
10 Cannon Street  
London EC4A 4BY  
Tel: 01-248 8000 Ext 3300

## The Office Automation Show and Conference

# Transform your office And your Business

Whatever the size and nature of your business — the ability to receive, send, analyse and act on information in moments rather than hours has never been more vital.

## Greater efficiency

Personal computers, word processors, communications systems. Bring them together and, quite simply, you're well on the way to a more efficient, more profitable business. Modularity, flexibility and lower costs mean you can start with the basics then add to them only when your needs dictate.

## Well-Proven Products

You will see the most comprehensive

range of products yet assembled in the UK — products that are already proving their worth in a wide range of companies from the smallest to the largest.

## Expert Help and Advice

Alongside the exhibition, a comprehensive conference provides guidance on the technology and how it can be profitably applied.

So whether you're starting to integrate your office or extending your system you'll find practical help at the Office Automation Show.

No one under 18 admitted.

## Office Automation Show and Conference

Barbican Centre, City of London, June 5th to 7th 1984

For 2 free tickets, attach your business card or letterhead to this ad and send to: The Office Automation Show and Conference, Chatsworth House, 59-61 London Road, Twickenham TW1 3SZ. Telephone 01-891 5051.

## PROJECT MANAGER

required for international investment group based in London to co-ordinate development and introduction of new financial products, to develop branch and house office procedures and provide administrative support to operations, finance and systems areas. Must be fully experienced in U.S. securities and commodities markets from both the sales and operations side, be cognizant of U.S. and other regulatory bodies' requirements and ideally be registered with NYSE. Educated to degree standard, aged 28-35 years. Salary circa \$36,000.

Please write in strictest confidence, including curriculum vitae, to:

Box 48553, Financial Times  
10 Cannon Street, London EC4A 4BY

## ACCOUNT EXECUTIVE

West End office of NYSE member firm requires Account Executive with U.S. brokerage experience, familiar with U.S. regulatory bodies' policies and procedures and NYSE, NASD registered. Education to degree standard. Age to 30. Base salary \$9,000. Usual fringe benefits.

Please write in strictest confidence, enclosing curriculum vitae, to:

Box 48700, Financial Times  
10 Cannon Street, London EC4A 4BY



THE ARTS

Common Ground/Sadler's Wells

Clement Crisp

In a praise-worthy burst of creativity, the Royal Ballet organisation put on three new works by house choreographers last week, with Jennifer Jackson's Common Ground for the Sadler's Wells troupe further evidence of the talent that must be encouraged.

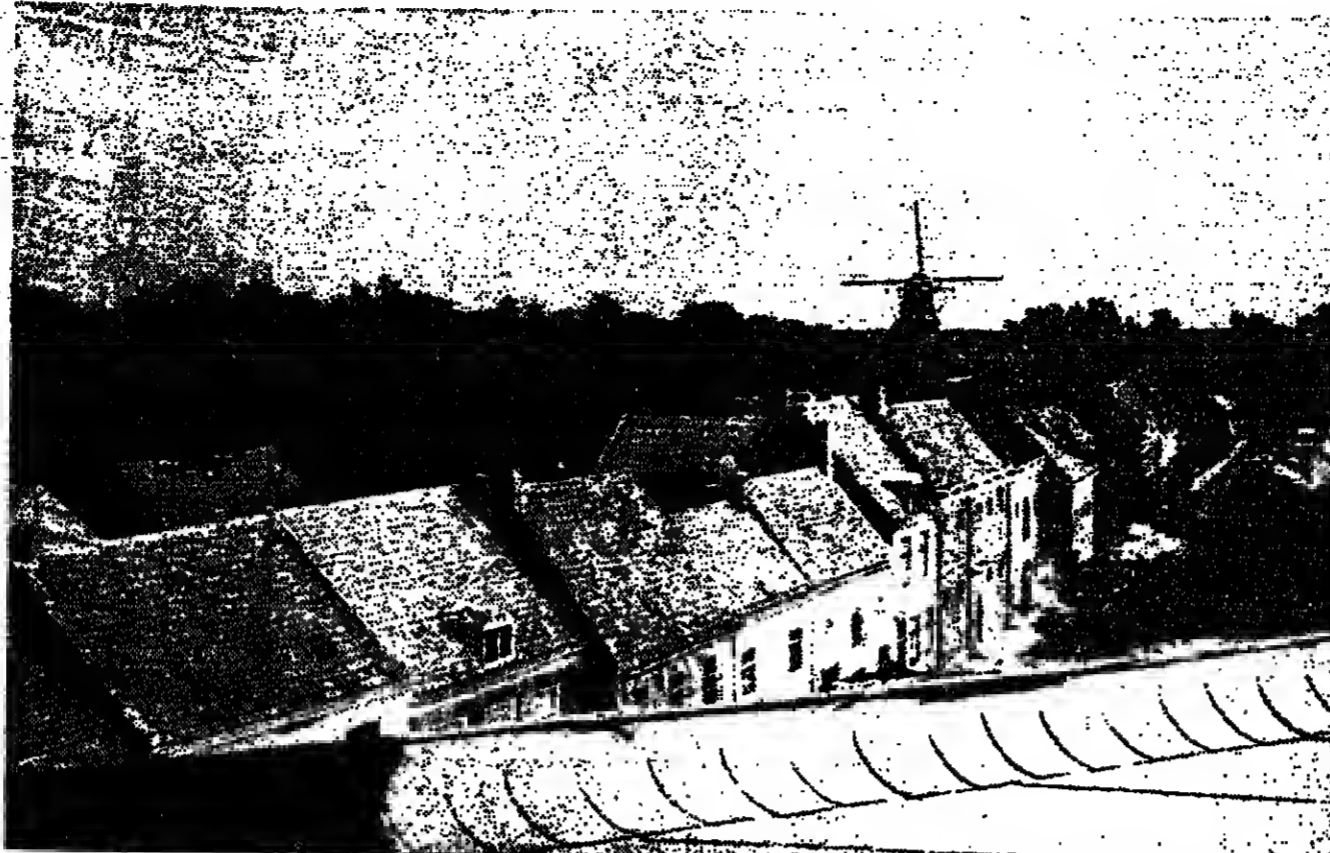
I saw Miss Jackson's ballet on Friday and enjoyed it even more on a second viewing on Saturday. The idiom is plotless, the cast numbers only eight dancers, but Miss Jackson responds to her score—Lennox Berkeley's Serenade for Strings—with alert, musically imaginative dances.

Her choreography does not stress what some observers seem to expect, that dutiful monkey-mouthing of step for note (what disarray must Agon note that disarray must Agon note, is to be believed), but there is a lively awareness of relationships between orchestral form and sonority in a movement language that already shows a true personal infection. Bodies twist and bend, there are abruptness, pinpoints with a flexed foot, quick changes of dynamics and direction, and an acceptance of the classic idiom in the process of being extended by a fresh creative gift.

The performances of the cast are stylish—Samira, Saidi

and Michael Batchelor in a duet; Karen Donover, David Yow and Michael O'Hara as a trio skimming and skittering over the stage—and the only drawback to the work is its dress. The designer, Ella Huhne, has decorated the stage intriguingly with what look like fragments of scoured paper. The mistake has been more in respect of the idea for the costumes: the men in string vests and pale trousers, the girls in daintiest ivory frocks; all the clothes dirtied and singed as if rescued from the flames.

Rarely have attractive dancers come on stage looking so grubby and the pallid colours of the stage picture detract from the unexpected emotional shading of the dance. With the glum beach-wear on view at Covent Garden for Return to the Strange Land and the pallid conventionalism of costume for Fleeting Figures, the merits of practice dress in Agon were never more apparent than last week. Nor has the need been more urgent for a design policy which will bring back elegance, chic and even some of the extravagance of present-day pop clothing, or the involvement of a major couturière like Jean Muir to dress dancing. Away with diaphanous, and ill-cut girlish frocks and trousers which distort line and deform dances!



Windmills, pantiles and neat rows of small houses are the elements of Buren, near Utrecht, one of many well-preserved Dutch towns

Architecture  
Colin Amery

A touchy problem in Holland

Holland is a country that projects a remarkably consistent image. It is flat and typical of any delta area. It has a unity of art and architecture and townscape. It is tidy, though densely populated, and always appears to be remarkably regulated, orderly and neat.

I was grateful recently to be shown how Holland is looking after its architectural heritage in several of the less well known towns and areas away from the tourist traps of Amsterdam, Delft and Haarlem.

What has always fascinated me about Holland is the closeness of the relationship between painting and architecture and the particular pleasure the Dutch seem to take in the organisation of domestic, small-scale perfection. The "Dutch vision" has developed from a land where every inch of space matters. It is bound to be intricate and depend for spatial illusions upon the reflections in long canals and the huge expanses of infinite sky.

Like any other war-damaged and light-industrialised Western European country Holland's preservation problems are complex and demand sensitive and detailed legislation and management. There are well over 40,000 protected monuments and historic monuments in the Netherlands. Most date from before 1850 and a start has been made on the more delicate business of listing later buildings erected up to 1930.

In one major respect the listing process differs in Holland because there is a two-year

period of temporary protection during which owners and other affected parties can make their objections known. This is pleasingly democratic, but would lead here to endless wrangles and difficulties.

I visited one particular problem building which is on the provisional list and is an example of general European significance. It was in 1930 that the architects J. A. Brinkman and L. C. van der Vlugt built, the magnificent light and streamlined tea and coffee factory for the Van Nelle family firm. It is a model factory still, gloriously light, elegant, functional and efficient. It has just been declared a monument but the company (now part of Nabisco Brands Inc.) is objecting strongly to the new status.

It is a complex issue. Can a working factory in need of major repairs be a monument? Van Nelle wants to double glaze to save energy and renew elements of the rusting steel facades in aluminium. There is no doubt, from evidence of the area that they have already revamped, that only some of the original character remains. I suspect that the early modern movement buildings erected after all, principally for their functional efficiency, are not made of the stuff that makes monuments. We have the problem here with early works of the industrial revolution—a few make interesting museums, the rest are probably well cleared away and replaced by new kinds of industrial constructions. It seems to me that industry

of these towns would offer the opportunity of seeing complete slices of townscape of a richness and unity of scale not likely to be seen in many places in England. However it is at some price.

New architecture is often poor pastiche, with the honourable exception of the new town hall at Zwolle. The uses of the much restored town can be somewhat artificial, too close to the tourist trade to be real with everyday life in fact continuing in the concrete worlds that are never far away. The cloud of pollution hanging over Rotterdam is part of the price paid for the expensive isolated historic towns. Holland suffers from its small size—the past and the present are literally cheek by jowl and it is a miracle that so much is there, restored and accessible for enjoyment.

JVC to sponsor jazz festivals

JVC (Victor Company of Japan) is to sponsor four major international jazz festivals in Europe and America for an initial three-year period. The festivals will include the Capital Jazz Parade in London, from July 15 to 21, and the Newport, Rhode Island, Jazz Festival in the United States. The company will also back the Grand Parade du Jazz in Nice (July 6 to 17) and the Bad Nauheim International Jazz Festival in Germany (July 10 to 12).

Brotsky Quartet/Wigmore Hall

Dominic Gill

I first heard the Brotsky String Quartet—who came together at the Royal Northern College of Music as long ago as 1972, when its members were still in their early teens—at the Brian Auger and Trinity Trio concert in 1980. Their playing was uneven and not always of the greatest finesse, but the jury were impressed by the young ensemble's unanimity, intelligence and drive, and awarded them a special medal for outstanding promise.

of Bartok's fifth quartet, the first work of their recital on Saturday night, might have been similarly judged. So much of it was right: bright-toned, impeccably tuned, enthusiastically driven with a powerful momentum. Only the musical gestures themselves lacked the precision of shaping and the poise demanded by that most exacting of all Bartok's quartets—the haunted musing and wild-flung melody of the first movement, the adagio's anxious quietude, the ondante's violent mood-

swings. It's a rare ensemble that can sustain both the right, very fast speed and the crystal clarity of articulation necessary for the finale. The Brotsky are nearly there, but not quite: those presto scherzo triplets should run like liquid fire. Perhaps Beethoven's op.132 is a quartet which they have studied longer, or one with which they have the more instinctive sympathy. It is a far more complex work: but their grasp of style and gesture was far surer and more confident. There were some roughnesses (and a consistent underplaying—of the cello part by Jacqueline Thomas which must be cured); but in its broad lines it was a powerfully convincing account, worked with much lively insight and care. The finale still needs tightening; but the two shorter inner movements were clearly, wittily pointed, and the adagio Domogossing had real radiance. I look forward to hearing more of Beethoven from the Brotsky

The Complete Guide to Sex

Martin Hoyle

The originally scheduled title had to be changed, if Desmond Olivier Dingle, Artistic Director of the National Theatre of Brent, is to be believed, in deference to those who, like Dr Comfort, believe they have cornered the market in the joy of sex. Frankly, I think Desmond and his Dingle is Alex Comfort. Only one of the two is a playwright of more than usually leering persuasion could have made up a sex counsellor with a name like that.

Desmond warns us initially that his probe into "human sexuality," "sex, as it is known," taking us through, or into, or possibly just under, the "seamy underbelly of contemporary culture" is not going to be fun, certainly not enjoyable (his cavalierly dismissive way with the letter "g" extends even to "Nottingham").

"Broadly along Brechtian lines," with homage to "Stanislavsky, Artaud, Brook and Lloyd-Webber," the evening at the Lyric Hammermith incorporates fairy tale, history and symbolic dance.

While we were disappointed at the sordid road-house sketch having to be played against a Japanese garden set (though the bridge was attractive!), this was more than compensated for by the analysis of mythic elements in Snow White and the Seven Dwarfs. With what consummate ease did versatile Wallace use the technical wizardry of a trap-door and false feet to create the illusion of a tiny person. How we sympathised with Snow-White's complaint "I've had dwarfs up to here."

The historical reconstruction of the crown of Edward VIII and Mrs Simpson had the vivacious touch of The Jewel in the Crown or The Young Visitors. And with what aplomb did Desmond recover his—er—aplomb at Miss Durant's dance entitled "The essence of womanhood," with its unexpected—well, violence.

We would be the last to condemn the outburst of oristic temperament that led to Wallace's mutiny during Beauty and the Beast; somehow, as several tiny figures in the Press seem to be doing, this was the very stuff of theatre. His performance as

Casanova, especially making lovely horse-noises so that one could almost see his spaming steed foaming, more than redeemed him.

Need we add that the evening is not without poetry? As a Chinese couple, musing over their age-old, noodle-like, National Theatre of Brent touch on the age-old mystery of "the way of a man with a maid," as Kenneth Tynan once said, when Wallace, in the persona of the wife, gives vent to the generous poetry of amorous badinage. "You wish to come through my amethyst gateways into my palace of gin," she asks softly; "what—with your jade hammer?"

With Maestro Stuart Berham at the piano and the dancing lady, Andrea Durant, it is all quite a Gesamtkunstwerk, as the German composer Wagner used to say. Perhaps because of a real "pross arch," as we say, Wallace, in the persona of the wife, gives vent to the generous poetry of amorous badinage. "You wish to come through my amethyst gateways into my palace of gin," she asks softly; "what—with your jade hammer?"

With Maestro Stuart Berham at the piano and the dancing lady, Andrea Durant, it is all quite a Gesamtkunstwerk, as the German composer Wagner used to say. Perhaps because of a real "pross arch," as we say, Wallace, in the persona of the wife, gives vent to the generous poetry of amorous badinage. "You wish to come through my amethyst gateways into my palace of gin," she asks softly; "what—with your jade hammer?"



Patrick Barlow

Arts Guide

Music/Monday, Opera and Ballet/Tuesday, Theatre/Wednesday, Exhibitions/Thursday, A selective guide to all the Arts appears each Friday.

April 13-19

Music

LONDON

Halle Orchestra conducted by Zdenek Macal with Robert Cohen, cello, Edgar and Bruckner. Barbican Hall (Mon), (6388891)  
London Symphony Orchestra conducted by Claudio Abbado with Maurizio Pollini, piano. Beethoven. Royal Festival Hall (Tue) (6283191)  
London Sinfonietta conducted by Lotar Zagrosek with Teresa Cahill, soprano and John Constable, piano. Stockhausen. Dall'Oncola. Muldowney and Ben Quenn Elizabeth Hall (Tue) (6283191)  
Royal Philharmonic Society and BBC Symphony Orchestra conducted by Sir John Pritchard with Brigitte Fassbinder, mezzo-soprano, Delius, Mahler and Strauss. Royal Festival Hall (Wed)  
Royal Philharmonic Orchestra conducted by Yehudi Menuhin with Edward Wulfsberg, viola. Glinka, Debussy, Tchaikovsky and Brahms. Barbican Hall (Wed)  
Philharmonia Orchestra conducted by Simon Rattle with Florence Quivar, mezzo-soprano, and John Mitchell, tenor. Mahler, Webern, Berg and Mahler. Royal Festival Hall (Thu)  
Jack Gibbons, piano: Bech, Chopin and Ravel. Quenn Elizabeth Hall (Thu), (9253193)  
Royal Philharmonic Orchestra conducted by Richard Harvey with John Ordo, piano, Berio, Sibelius, Tchaikovsky and Mussorgsky/Ravel. Barbican Hall (Thu)

PARIS

Grace Buxley recital, Geoffrey Parsons, piano (Mon), Théâtre de l'Athénée (7428727)  
Orchestre National de France and Radio France Choir conducted by Emmanuel Krivine with Christiane Eda-Pierre and Elizabeth Söderström. Soirée France. Salle Pleyel-Jean Cocteau (Mon), Salle Pleyel (624622)  
Ensemble Orchestral de Paris, Jean-Pierre Wallès as conductor and soloist, Christian Crenna, violin, Manfred Stitz, flute. Vivaldi (Mon 2.30pm). Tue and Thur 10am and 2.30pm. Théâtre des Champs-Élysées (7244777)  
Nouvel Orchestre Philharmonique conducted by Gerard Alkoha, Olivier Gardon. piano: Prokofiev, Bartok (Tue), Radio France, Grand Auditorium (3241316)  
Nouvel Orchestre Philharmonique. Ensemble Rampeu, Matrie de Radio France conducted by Henri Farge, Pergolesi, Coretti (Wed) Saint-Louis-en-l'Île (6241518)  
Orchestre de Paris conducted by Gary Bertini. Mahler's 8th Symphony (Wed, Thur) Salle Pleyel (6287996)

NEW YORK

New York Philharmonic (Avery Fisher Hall): Zubin Mehta conducting, Lorne Munroe, cello, Carter, Bloch, Tchaikovsky (Tue), Zubin Mehta conducting, Leon Mitchell, soprano, Thomas Allen, baritone, West-

MINSTER CHOIR

minster Choir directed by Joseph Fummerfelt. All-Brahms programme (Thu), Lincoln Center (6742424)  
Cast: Recital Hall; American Brass Quintet: Scheidt, Stolzer, Tsontakis, Maurer, Snow, Ferraboco (Wed), (2477499)  
Madras Saram (Avery Fisher Hall): Richard Westenberg conducting, Charles Bressler, tenor, Malcolm Smith, bass, Gwendolyn Bradley soprano, Janice Taylor mezzo-soprano, Jon Humphrey, tenor, Justine Diaz, bass. All-Brahms programme (Wed), Lincoln Center (6742424)  
Merkin Hall (Goodman House): Elaine Greenfield, piano; Pamela Goldstein, flute recital; Deborah, Rosalind, Gilbert, Martin (Thu), 8th W of Broadway (3628719)  
Y Chamber Orchestra (Carnegie Hall): Gerard Schwarz conducting Alfred Brendel, piano. AB-Beethoven programme (Thu), (477459)

VIENNA

Hanna-Berit Hahnemann, violin. Beethoven, Grieg, Richard Strauss. Bösendorfer Sal. Mon)  
Viviane Gomezi, piano, Mozart, Beethoven, Chopin, Schumann. Bösendorfer Sal. (Thu)  
ITALY  
Venice: Teatro La Fenice: From April 13 to 22, a series of concerts of different types of music all written for Easter, including Gregorian Chant. (211)  
Rome: Teatro Olimpico (Piazza Gentile da Fabriano): Messiah sung by the Choir of New College, Oxford.  
Rome: Auditorio di Via Della Conciliazione: Honnegger's Jeanne d'Arc au Rocher - a dramatic oratorio. Mon and Tue, (641044)  
Rome: Oratorio del gonfalone: Violino Della Scimmia 1/D: Vivaldi and Bach - Arrigo Pedrolli Orchestra of Verona conducted by Giovanni Cuglielmo. (665992)  
Bologna: Teatro Comunale: Mozart, Schubert, Brahms, and Strauss with the soprano Edith Mathis and pianist Edelmir Arnelas. Mon. (22899)

CHICAGO

Chicago Symphony and Chorus (Orchestra Hall): Sir Georg Solti conducting, All-Schubert programme (Thu), (4338122)

WASHINGTON

National Symphony (Concert Hall): Riccardo Chailly conducting, Vladimir Ashkenazy, piano, Ives, Brahms (Tue, Wed, Thur), Kennedy Center (2543776)

ZURICH

Tonhalle: Tonhalle Orchestra conducted by Aldo Ciccolini, R. Strauss, Stravinsky and De Falla. (Tue to Fri), (2611580)

WORLD VALUE OF THE POUND every Tuesday in the Financial Times

CLEARWAY TO BUSINESS OPPORTUNITIES IN ELECTRONICS. The Highland Region of Scotland is already an area of established growth in the electronics field. Numerous existing companies are thriving in this quality environment because the Region is particularly well suited to the needs of expanding small and medium-sized companies. Exclusive high amenity sites are already identified and there a skilled and trained workforce to draw upon. Communications are excellent, with reliable postal, telecommunications and transport services to ensure UK and worldwide contact with clients. We are particularly interested to hear from expanding companies seeking to establish a profitable base of operations. Alternatively the existing Electronics companies established in the Region would welcome subcontract, contract or joint-venture opportunities. For further information you are invited to contact Peter Macdonald, Development Director, Highlands Regional Council, Fraserburgh Road, Fraserburgh IV3 5BR for telephone Louisa on 0483-29231 Ext. 4011.

CO-BAN EUROFINANCE B.V. US \$30,000,000. Guaranteed Floating Rate Notes 1991. Guaranteed on a subordinated basis by CO-OPERATIVE BANK PUBLIC LIMITED COMPANY. Notice is hereby given pursuant to the Terms and Conditions of the Notes that for the six months from 15th April 1984 to 15th October 1984 the Notes will bear an interest rate of 11 1/2% per annum with a coupon amount of US\$290.70. London & Continental Bankers Limited Agent Bank.

Istituto per lo Sviluppo Economico dell'Italia Meridionale (A statutory body of the Republic of Italy incorporated under Law 298 of 11th April, 1963). U.S. \$70,000,000 Floating Rate Notes due 1990. (Redeemable at Noteholder's Option in October 1988). Notice is hereby given that the Rate of Interest has been fixed at 11 1/2% per annum and that the Interest payable on the relevant Interest Payment Date, October 15, 1984, against Coupon No. 2. In respect of US\$10,000 nominal of the Notes will be US\$584.55. April 13, 1984, London. By: Citibank, N.A. (CSSI Dept), Agent Bank. CITIBANK



FINANCIAL TIMES BRACKEN HOUSE, CANNON STREET, LONDON EC4A 3DF

Monday April 16 1984

The German 'spring'

MORE THAN 15,000 people from East Germany have been allowed to leave for the West since the beginning of this year.

On humanitarian grounds this letting-up on the part of East Berlin is much to be welcomed.

When one of Dr Kohl's closest advisers says that Bonn does not intend to "depopulate" East Germany he is not merely stating the obvious.

Beyond that, by keeping on speaking terms with Bonn, Herr Honecker secures material advantages for his republic which indirectly benefit the rest of East Europe.

last week were a reminder that ultimate authority rests with Moscow. For the moment, however, Moscow appears to believe that it should not be intransigent with Bonn.

Recent governments in Bonn have handled these delicate matters with responsibility. Those in authority have resisted any temptation to play with fire.

When one of Dr Kohl's closest advisers says that Bonn does not intend to "depopulate" East Germany he is not merely stating the obvious.

On a larger historic canvas, recent events are a reminder that Germany remains at the centre of Europe.

"We feed you - don't starve us," said the farmer's banner at the Whitehall protest rally against the recent Common Market farm price agreement.

Around the ranks of the farmers critics have built a barbed wire fence of hostility. Everybody seems to think farmers are too fat.

As Sir Michael Franklin, Permanent Secretary to the Ministry of Agriculture, put it in gentle Whitehall-speak at the Ministry's annual November outlook conference: "The tide of public opinion is running against the industry."

Mr Body's thesis is that farm prices should be allowed to fall rapidly to prevailing world prices, even though that would force farmers on poorer land to abandon cereals production.

When one of Dr Kohl's closest advisers says that Bonn does not intend to "depopulate" East Germany he is not merely stating the obvious.

On a larger historic canvas, recent events are a reminder that Germany remains at the centre of Europe.

British Agriculture

Brussels: the first turn of the screw

Ian Hargreaves on the impact of the EEC's policy change

livers almost 5,000 litres of milk a year, against less than 4,000 a decade ago.

Since the Thatcher Government has also shielded farmers from the ill-effects of petrodollars, whose brilliant yellow glow will soon be chequering the countryside from the south coast to Scotland.

From the farmers' point of view, things look rather different. They see themselves as victims of successive governments' enthusiasm for self-sufficiency in food.

Asked, in 1973, to ensure that Britain's accession to the Treaty of Rome did not lead to a damaging rush of EEC food imports, farmers have performed well.

With 12 per cent fewer workers and 2 per cent less land, real gross farm output has risen by 14 per cent inside a decade.

livers almost 5,000 litres of milk a year, against less than 4,000 a decade ago.

Since the Thatcher Government has also shielded farmers from the ill-effects of petrodollars, whose brilliant yellow glow will soon be chequering the countryside from the south coast to Scotland.

From the farmers' point of view, things look rather different. They see themselves as victims of successive governments' enthusiasm for self-sufficiency in food.

Asked, in 1973, to ensure that Britain's accession to the Treaty of Rome did not lead to a damaging rush of EEC food imports, farmers have performed well.

With 12 per cent fewer workers and 2 per cent less land, real gross farm output has risen by 14 per cent inside a decade.



Agriculture Minister Michael Jopling: implementing the cuts

to 10,000 of the country's 57,000 dairy farmers going out of business.

But as he faces this new era, just how fat is the British farmer? The answer is that he is, on average, asset-rich but cash-constrained.

Real farm income (see chart) has fallen more or less steadily since 1973, with the exception of the good weather boom year of 1982.

institutional buying which did much to drive prices higher in the mid-1970s.

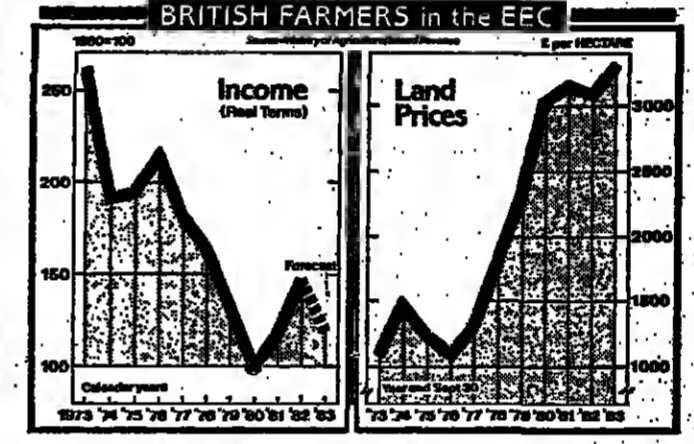
Mr Robin Leigh-Pemberton, a Kent farmer who is also Governor of the Bank of England, took the opportunity of addressing a farming audience in January to warn that if the price of poorer land had shown recent signs of weakness.

One body which without doubt has major problems on its hands is the Milk Marketing Board, the farmer-owned organisation which not only distributes milk but also owns 90 per cent of the butter factories in England and Wales.

cow has fallen by about 230 or 8 per cent in the last three weeks, but dairymen have other ways of reducing output.

Meanwhile the poor pig and poultry farmers, whose net income in the year just ending is put at one quarter of the real 1973 level, just what they had benefited from a CAP regime in the first place.

Whether the process ever could or even should go the whole radical distance advocated by Richard Body is another matter.



BRITISH FARMERS in the EEC. Income (Real Terms) and Land Prices (1973=100) 1973-83

A service for job-seekers

THE Manpower Services Commission has just announced plans to reorganise its national network of job centres, provoking a hostile reaction from the unions and the Labour Party.

Second, the 1970s saw a huge upgrading of the public employment service. Seedy employment exchanges have given way to nearly 1,000 bright, orange-fronted, job centres, many occupying prime high-street sites.

Transatlantic car rally?

"I believe the pendulum is about to swing back in favour of British cars in the U.S.," says Malcolm Bricklin, explaining why he is in London.

He set up a company in the States with \$12,000 in 1968 to import Subaru cars from Japan.

Men and Matters

There could be solar freezers throughout the Sahara. Every oasis should have one.

When you run a firm like Alex Ball's Business Intensive Care, performing operations on ailing companies, you very soon learn to recognise some symptoms of small business troubles.

Hot and cold

A solar-powered freezer sounds something of a paradox. But the lateral thinkers at Bognor Regis, Sussex, based Lec Refrigeration have developed just that.

Nothing can be taken for granted in the fast-moving world of the Unlisted Securities Market.

Garden party

Many of the craftsmen and plant specialists who came to lay out their exhibits for Liverpool's National Garden Festival next month have completed their work—though not without the odd blower.

Nothing can be taken for granted in the fast-moving world of the Unlisted Securities Market.

HEAR

Who could fail to wax lyrical in a sumptuously appointed conference suite at the Inn on the Park?

As an arena in which to discuss affairs of business, there is simply nowhere more conducive to inspiration, more attentive to detail, or more richly memorable than the Inn on the Park.

HERE.

Cuisine inspired by our famous restaurants, impeccable service, and elegant decor blend their inimitable roles to create the perfect setting for any business gathering.

Inn on the Park Hamilton Place, Park Lane, London W1.







**BEARINGS**  
FROM STOCK  
IN LONDON  
FIT & METALS LTD. TEL. (01)-568 5125/6

# FINANCIAL TIMES

Monday April 16 1984

**Trollope & Colls (City)**  
BUILD WITH CONFIDENCE  
call Patrick Trollope  
01-377 2500.

## Terry Byland on Wall Street

### Short shrift for thrifts

NO SECTOR has suffered so severely from the pessimism over U.S. interest rates as the savings and loan companies, which have plunged from the role of market favourites to that of pariahs in less than twelve months.

The combination of a high short-term interest rate and the long span of the average mortgage caused the distress of the S & L industry in the 1970s, but it may be that the current weakness in stock prices is overlooking the industry's readiness to respond to the changes wrought by the introduction of "secured" mortgages, which has created a strong secondary market for housing finance, and of adjustable rate mortgages.

Stocks of the 150 or so major savings and loan groups, or thrifts, as they are known, have seen their prices fall by about a half since the peaks of midsummer 1983. There was a slight hardening of prices in the middle of last month, but two prime rate increases since then have discouraged the optimists.

The thrift stock price index compiled by Becker Paribas now stands at 174, about 40 per cent off its peak in July 1983, and has fallen by 16 per cent since the beginning of this year. (The index has a 1973 base of 100 and takes in eight New York stock exchange stocks and 18 over-the-counter issues).

Results for the first quarter, due this month, are unlikely to bring much recovery.

The second quarter, however, should have the benefit of a turn of financing in favour of the thrifts. Quite apart from any longer-term considerations, it will bring the refinancing of the very expensive 30-month certificates of deposit with which the thrifts filled their books at the end of 1981. Becker Paribas reckons that about 8 per cent of total industry deposits consist of these CDs.

The S & L industry learned about inflation the hard way in the late 1970s and has taken great care to restructure mortgage portfolios. Thrifts have hastened to convert mortgage loans into securities by obtaining participation certificates from the federal agencies concerned. This allows mortgages to be sold on, limiting the thrifts' exposure to interest rate trends.

The thrifts have also taken full advantage of the financial futures markets. They have become heavy sellers of CDs.

Mr Jonathan Gray, of Sanford C. Bernstein, believes that the major California S & Ls, which are the heart of the industry, will have "virtually eliminated their interest rate exposure" within 18 months.

At this point, he comments, the S & L stocks will be closely akin to those of the regional banks, although the current price-earnings ratio of about 5.5 on the thrifts is only about two thirds of that on bank stocks.

There is just on caveat hanging over S & L stocks. Adjustable rate mortgages, which are the major support of the currently booming U.S. housing market, as well as of the mortgage business, could be a time bomb.

The initial wave of these mortgages, which offer the borrower low rates for the first few years of the mortgage, come up for readjustment next year. If interest rates are still high, there could be a further upsurge in mortgage delinquencies which have been climbing strongly since 1980. The effect on thrift company earnings of such a development has yet to be computed in Wall Street.

Some industry leaders have foreseen the danger. Both Great Western Financial and H.F. Ahmanson, two of the oldest publicly quoted thrifts, index their adjustable rate mortgages to the industry's cost of funds, which at least assures them of stable spreads.

It may be that the continuing fear of higher interest rates is having an undue psychological effect on the stock prices.

"There are few savings and loan stocks you would not want to own, if rates turn lower," is the way Mr Gray puts it.

## BRITISH FOREIGN SECRETARY STARTS VISIT TO CHINA

# Howe to focus on future of HK

BY ALAIN CASS IN LONDON

HIGH-LEVEL talks between Britain and China over the future of Hong Kong are to be held in Peking today, when Sir Geoffrey Howe, the British Foreign Secretary, meets his Chinese counterpart.

Sir Geoffrey and Wu Xueqian are to meet for several hours of discussions. The talks are the first at such a high level since Mrs Margaret Thatcher, Britain's Prime Minister, visited Peking in September 1982.

Senior officials accompanying Sir Geoffrey say that no decisive outcome is expected but they hope the visit will give a much-needed political impetus to the tough negotiations over the colony's future which have been taking place since last July.

The British team hopes that Sir Geoffrey will meet Deng Xiaoping, the Chinese leader, on the second

day of his visit before flying on to Hong Kong. The latest round of Sino-British talks ended last week and, with important details still to be resolved, the British Government is becoming "extremely sensitive" to the growing uncertainty in the colony.

Officials have attempted to put on a brave face after the recent announcement by Jardine Matheson, the major Hong Kong group, to move its holding company to Bermuda.

But now that the key issue of the return to China of the territory's sovereignty and administration has been effectively settled in Peking's favour, relations have become strained between Britain's and Hong Kong's representative bodies, such as the appointed Executive Council.

There is considerable disappointment in the colony over Sir Geoffrey's decision to go initially to Peking. The first major announcement of his talks with the Chinese leaders is not, according to officials, expected until Friday, the last day of his visit to Hong Kong.

The lease on 92 per cent of the colony's territory expires in 1997 and China has maintained that the 1982 treaty, which cedes Hong Kong island to Britain in perpetuity, is invalid.

Britain now seems to have accepted the inevitability of a full handover of the entire colony after 1997 but is attempting to extract the fullest guarantees possible from Peking that the colony's capitalist system will be maintained.

The UK is also still hoping for some kind of advisory role in run-

ning the colony after that date, believing that this will calm fears of an insidious Communist takeover which may lead to an exodus of capital.

China has promised that Hong Kong will become a "special administrative region" and that its social and economic structure will be maintained for 50 years after the lease expires.

UK Government officials maintain that while "real progress" has been made in 12 rounds of talks, hopes of an outline agreement before June or July are premature.

Peking has set September as a deadline for a full agreement, but Britain says this may not exclude continuing talks on points of detail after that.

BP China lease bid likely, Page 3

## Reuters drops plans to bid for 20% stake in Mercury

BY CHARLES BATCHELOR IN LONDON

REUTERS, the international news agency, has withdrawn from the bidding for a 20 per cent stake in Mercury, the privately owned British telecommunications group.

Reuters confirmed yesterday that it is no longer interested in the Barclays Merchant Bank stake in Mercury, which plans to set up a private communications network to compete with British Telecom.

The news agency's board is understood to have reached this decision at an all-day board meeting last Wednesday, despite the advanced stage the talks had reached.

No reasons for the decision were given. Mercury and its two other shareholders, Cable & Wireless and BP, each with 40 per cent, refused to comment yesterday.

Reuters withdrawal is thought to leave Pacific Telesis, a West Coast U.S. telephone company, as the only major concern seeking an interest in Mercury.

It will, however, have to overcome several hurdles. It must, for

example, win official backing from the U.S. and UK Governments.

A link-up between Mercury and Reuters would have given the former access to Reuters's financial information services and provided Reuters with a stake in its own communications circuits. At present it leases circuits from national post offices and private companies.

Barclays wants to pull out of Mercury because the investment costs are escalating and the bank is approaching the ceiling of about £20m (£42.6m) it set on its own investment.

Reuters, which plans a public flotation within the next two months, is actively looking for other acquisitions to strengthen its position in the information and communications markets.

It hopes to raise about £70m for its own investment programme from the flotation which had been expected to value the company at about £1bn. Opposition from major investment associations in Britain

to its plan for preferential voting rights for some shares may reduce the market value of Reuters however.

Reuters is now expected to provide investors with full details about the company - in the form of a prospectus in the UK and a registration document in the U.S. in mid-May and offer its shares simultaneously in London and New York in early June.

Reuters and its advisers, S. G. Warburg, the British merchant bank, are privately believed to be very concerned at the prospect of a boycott of the shares by large pension fund and insurance company investors.

The National Association of Pension Funds and the British Insurance Association are opposed to the plans to float Reuters in its present form. It is unclear how many institutions would boycott an issue which - apart from the preferential voting right issue - is potentially very attractive.

## UK printer axes 900 jobs as demand for bank notes falls

BY JAMES McDONALD IN LONDON

BRADBURY Wilkinson, the British security printer which is a subsidiary of International Banknote Corporation of the U.S., is to cut 900 jobs at its main operating plant near London because of a serious shortage of orders for bank notes and other security printing.

This decision will reduce drastically Bradbury Wilkinson's workforce in Britain from the present level of around 1,600.

Bradbury Wilkinson and the De La Rue Group have been traditional competitors in the security printing field, seeking orders to print bank notes and cheques for customers in about 60 countries. It has been a lucrative business for both companies.

But in recent years, many of these customers have set up bank note printing plants to produce

their own notes, sometimes on a heavily-subsidised basis.

Even in the UK, the Bank of England last year issued only 1,620m new bank notes, compared with 2,050m notes in 1978. Bank notes are in less demand as almost every developed country witnesses a rapid growth in cashless payment services.

Redundancies at Bradbury Wilkinson will come into effect this summer and the company says formal consultations with the relevant trade unions have already begun.

Sogat 62, the print union, is the major union involved. In December, 1982, Sogat members carried out a three-week strike in protest against planned job cuts by Bradbury Wilkinson and the 500 planned redundancies were reduced by about 150. The company plans to increase

jobs at its plant in Cornwall, where the printing, finishing and allied operations will be moved. Employees at the London plant will be offered jobs and relocation, where possible, in the Cornwall area. Additional premises in the Plymouth area also have been acquired.

Mr Gordon Hall, chairman of Bradbury Wilkinson, said yesterday: "We have tried to limit the number of redundancies to the very minimum. However, we are determined to ensure that Bradbury Wilkinson, as a leading world security printer, remains a force to be reckoned with."

Apart from its London and Cornwall plants, the company has operations in Sausser, and Buckinghamshire. It also has joint venture projects in New Zealand and in the Far East.

## Mauroy confronts Communists

Continued from Page 1

An official of the pro-socialist CFDT union also said that the redundancies were "unacceptable."

In an effort to avoid another major labour confrontation, the Citroën management has trodden warily in presenting the planned labour force reduction. Before Friday's meeting it sounded out the mainly immigrant workforce at its Paris-based plants to find how many would return voluntarily to their countries of origin.

Of 4,700 consulted, however, only 4.5 per cent were ready to accept bonuses of FFr 70,000 and

leave. Citroën employs about 18,000 immigrants - mainly North Africans - in the Paris area.

The group is also offering re-training schemes and a shift to part-time working in an effort to bring the number of redundancies down to 2,000. About 3,100 workers will be taking early retirement.

In striking an aggressive posture, the CGT is anxious to avoid the mistake it made at the Talbot plant at Poissy, also near Paris, earlier this year. The union leadership then tacitly accepted 1,900 redundancies, only to find that

its rank and file was bitterly opposed to the compromise struck with the management and Government.

The CGT is also likely to adopt a more militant line after the success of the steelworkers' strike on Friday. Although this will not bring any reversal of the steel restructuring plan, it has confirmed the CGT and the French Communist Party in their desired role of being seen as the main defenders of jobs.

The Communist Party is taking an increasingly critical view of the economic policies of the Government

## Salvador finds arms adequate to fight on

By Robert Graham in San Salvador

THE REAGAN Administration's bleak warnings that the Salvadoran armed forces are running dangerously short of munitions and equipment to combat left-wing guerrillas have not affected the level of combat in El Salvador. Nor has any member of the Salvadoran High Command gone public to back up these warnings.

The Reagan Administration, including the President, has insisted several times during the past three weeks, that the \$62m emergency aid package to the Salvadoran armed forces was essential because of the dire shortage of arms and ammunition.

Congress adjourned for the Easter recess on Friday without acting on the request, but Reagan is still hoping for early approval of the package after the recess.

Mr Thomas Pickering, U.S. ambassador in El Salvador, told journalists that the shortages would have "serious effects" on the Salvadoran armed forces' ability to protect the second round of presidential voting and the interim period before the installation of the new president in June. Mr Pickering said there was urgent need for rifle grenades, aircraft munitions, 81mm mortar rounds, medical supplies and military radios.

A Salvadoran officer said last week: "We are always short of equipment in this army. For in-

## THE LEX COLUMN

# Making a market for equity

The London Stock Exchange's bargain with the Government implied from the outset an obligation to replace the long-trusted jobbing and broking system with a dual capacity dealing structure. To ensure that this would combine fairness with depth and liquidity was never going to be easy, but it looks as if design by committee has made the task almost impossible. The exchange's discussion document leaves far too much open in its attempt to please everybody, yet it ends up by appearing to endorse a solution which - like that classic compromise, the camel - seems to combine most of the available disadvantages.

The mere fact that there is so little time available for making such a radical change is in itself a powerful argument for building the new system from tried and tested machinery, in a sense which goes beyond the obvious and pressing need to commission the necessary electronic hardware in the next few months.

Share precisely ought to dictate that the market practices which the exchange adopts are pretty well known in advance to be reliable under the sort of trading volumes which they are expected to bear. That alone probably rules out any attempt at technological leaping, such as perhaps aiming for a purely electronic exchange with no trading floor. It also argues strongly against the adoption of any market structure whose working claims more than the minimum of claims on the patience (and honesty) of the traders who are meant to operate it.

This admittedly unadventurous criterion suggests a fairly direct, even slavish, attempt to transfer structures that have stood up well to extremely heavy traffic in the U.S. The bricks - the Big Board and Nasdaq - are there even if it may be necessary to assemble them differently.

To try to keep alive some shadow of the single capacity system would

be a blunder, as the exchange appears to recognise. While there could be distinctive aspects of the London equity market which many members of the exchange may wish to preserve, such as the wide variety of securities which are at present traded under the same umbrella, it is questionable whether all the desirable features can be kept going by the invention of a distinctively elaborate unified trading system.

Yet this is what the committee seems to be proposing when it puts the limit of its effort into drawing up an approach in which some of the competing broker-dealers function as market makers (in a given stock) while the rest are obliged to let a market maker see their bargains.

Whichever side of the market place it is viewed from, this set up appears to suffer equally from the requirement that bargains have to be exposed to market makers (unattractive from the perspective of those who plan to operate mainly as agents in matching trades) and from the offering proposal that on the floor of the market only prices and spreads should be continuously published (which prospective market makers feel would show too much of their hand). Both feel that such a market might break down, or at any rate become illiquid.

The natural fear among market makers is that in a market supplied with continuous information on all the competing orders, most of the orders would be done by parasitic broker-dealers.

Market makers might see little of the business, and could end up dealing the wrong way on those bargains that they see. Though the rules would clearly be framed to exclude this possibility, it is asking rather a lot of market makers to believe that other dealers can truly be prevented from executing most bargains at net prices, no questions asked.

The complementary nightmare is that the requirement of exposure

would restrict the liquidity of everyone except the market makers, and curb the broker-dealer's freedom of action as a principal. The document itself recognises that market makers may often be competing with the very dealers who are obliged to expose orders to them, so the exposure rules could hand market makers the chance to frustrate the business of fellow broker-dealers.

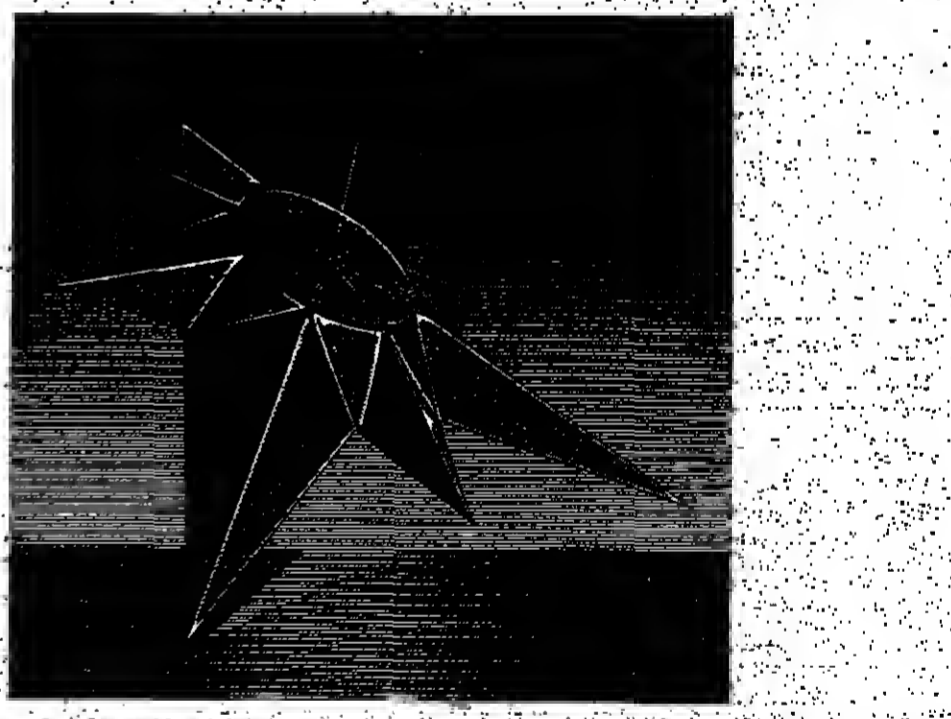
This again might lead to a predominantly net market, entailing that investors generally obtain second-best prices. In addition, the proposed absence of "best trader" information puts a heavy burden on the faith of investors, as it does on the regulatory authority.

Worse still, if it became clear that business within the market being done on this fragmented and inefficient basis, the inducement to large institutional investors to set up "third markets" trading off the back of the exchange might outweigh the attractions of formal membership.

There is a chance that most of these snags can be avoided if the exchange is prepared to consider a two-tiered market, with trading systems appropriate to the different types of security. The equity market is already highly diverse, so there need not really be any objection to further diversity of dealing method, particularly if this is the price for ensuring that the whole market is traded efficiently and fairly.

Notion/specialist arrangements are clearly workable for the most active stocks, although it must be a tricky question how specialists can keep their trading books alive overnight in the integrated world market. Something along the lines of Nasdaq would be suitable for smaller stocks (or those unwilling to face the Big Board's requirements on disclosure or voting). At least there is no doubt, thanks to full last-trade information, that Nasdaq is highly efficient. The advantage of an auction for blue chips is that an auction wears its efficiency on its face.

## Only someone on the right course can help you with yours.



A universal bank has the right instruments to determine your exact position and help plot the best course to your goal. The coordinates of our branch system dot the globe.

Among our comprehensive services are time and notice deposits in all major currencies, short, medium and long-term loans (overdrafts, straight and roll-over loans, acceptance credits in £-stg, US \$, DM and other Eurocurrencies with special emphasis on trade finance and forfaiting), placement and trading in foreign securities such as Eurobonds, convertibles etc., foreign exchange, and international portfolio management.

Whenever and wherever you encounter problems with complicated international financing, contact the Deutsche Bank.

We'll put your business on a proper course.

Deutsche Bank AG  
London Branch  
6 Bishopsgate, P.O. Box 441  
London EC2P 2 AT  
Tel: 2 83 46 00

## World Weather

Area	C	F	Area	C	F
Africa	18	64	London	18	64
Algeria	17	63	Madrid	19	66
Amman	15	59	Moscow	15	59
Beirut	15	59	New York	15	59
Brussels	15	59	Osaka	15	59
Cairo	15	59	Paris	15	59
Colombo	15	59	Rome	15	59
Hong Kong	15	59	Stockholm	15	59
London	15	59	Tokyo	15	59
Lyons	15	59	Washington	15	59
Manila	15	59	Wellington	15	59
Medan	15	59	Yokohama	15	59
Perth	15	59			
Rangoon	15	59			
Singapore	15	59			
Sourabaya	15	59			
Taipei	15	59			
Tientsin	15	59			
Yokohama	15	59			

## Warning over pit strikes

Continued from Page 1

one the majority required to authorise national strike action.

This change itself requires a two-thirds majority among conference delegates and the indications yesterday were that this could be a very close-run thing.

Previously unpublished area breakdown figures of the Harris poll also give substantial encouragement to the NUM leaders. They show that support for a strike is well up on the levels of the last strike ballot in March last year.

Only one area - Nottinghamshire - has a majority - 48 per cent - against a strike.

## Debt rule may hit UK banks

Continued from Page 1

budget move to end capital allowances. Most other countries, including the U.S., allow their banks to include loss provisions in their capital, so British banks could suffer a handicap, albeit a small one.

The proposed ruling marks the latest twist in a long tussle between banks and government authorities, including the Inland Revenue, over the treatment of provisions for less developed countries' loans. Much of the trouble is due to the fact that countries - unlike companies and individuals - were never thought capable of going bankrupt and defaulting on their loans.

Published by The Financial Times (Europe) Ltd., Frankfurt Branch, represented by G.L.R. Dancy, Frankfurt/Main, F. R.G. R.A.F. McClen, M.C. Gosses, D.E.F. Palmer, London, as members of the Board of Directors, British Financial Times Syndicate-Deutscher Verlag, Frankfurt/Main. Responsible editor: C.E.P. Smith, Frankfurt/Main. © The Financial Times Ltd. 1984.



SECTION II - COMPANIES AND MARKETS
FINANCIAL TIMES

Monday April 16 1984

Travis & Arnold
Timber, Building Materials, Heating and Plumbing Equipment for the Construction and Allied Trades. Northampton 52424.

CONDER PROJECTS
Your building needs. Exactly.
Telephone: Winchester (0962) 882222.

Connoisseur's credit prompts speculation on French return

BY PETER MONTAGNON, EUROMARKETS CORRESPONDENT IN LONDON

GAZ DE France is raising \$100m in the Eurocredit market in the first public operation by a French state borrower since Credit National launched its £100m credit last November.

News of the credit on Friday immediately prompted market speculation that French state names might be poised to resume their borrowing in this market after a long period of concentrating mostly on international bonds.

Led by Chase Manhattan and Société Générale it is a 12-year revolving standby credit that operates much like an overdraft. Gaz de France has total flexibility in drawing the funds instead of receiving the full amount in one lump sum which would have been the case for a floating rate note.

Banks will receive a commitment fee of 4 per cent, which is very low by current standards, but there will also be an additional 1/2 per cent retroactive commitment fee paid on funds drawn after a period of six months in which the credit has not been used.

A 12-year maturity on such a deal is rare in Europe, and this will give Gaz de France the chance to extend the profile of its foreign debt. One lesson for the market is that top-rated borrowers with ready access to the FRN market now need a special reason for tapping the credit market instead.

NatWest floater well received

BY MARY ANN SIEGHART IN LONDON

"IS IT a bond? Is it a share? No, it's a perpetual floater." National Westminster Bank's bond-with-no-maturity, launched last Thursday got almost as rapturous a reception as the film of Superman, making the market wonder whether perpetual floaters 2 and 3 will soon be on their way from other borrowers.

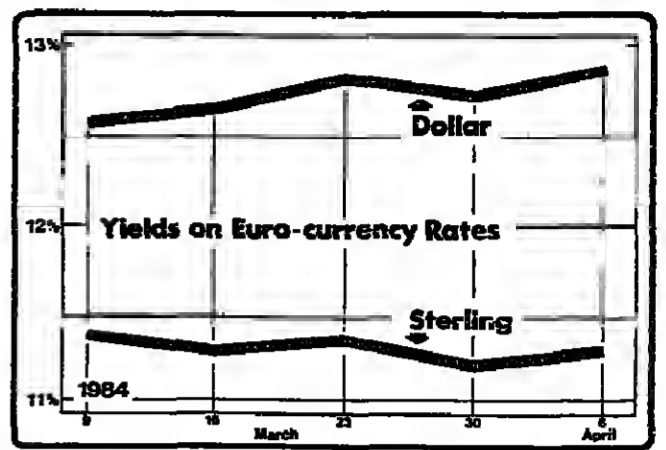
Back in January, when floating rate note euphoria was at its height, bankers claimed that the maturity of a floater was immaterial as long as it was actively traded. Fifteen-year and then 20-year bonds were launched very successfully, but when Sweden's 40-year FRN met with a lukewarm reception, the market became more sceptical.

Last week proved more propitious. Having been issued as a \$200m deal - \$100m to be launched initially and \$100m on tap - the initial tranche was doubled to \$200m within hours. Then on Friday, lead manager County Bank raised the

immediate portion to \$300m and the tap to \$300m. Still the bond traded well over par.

Investors were obviously attracted by the 1/2 per cent spread over the six-month London interbank offered rate (Libor), which compared with a yield of around 1/4 per cent over Libor for comparable bank paper with fixed maturities.

Dealers were still wondering on Friday why NatWest had so much better a reception than Sweden. One reason must have been timing - Sweden's bond was launched just as investors began to have doubts about the durability of the FRN market.



morning when prices were rising and a lot tighter by the afternoon when the benchmark U.S. Treasury long bond dropped in price by a whole point on a larger than expected rise in U.S. industrial production.

Table with columns: Borrowers, Amount, Maturity, Av. life years, Coupon, Price, Lead Manager, Offer yield, Borrowers, Amount, Maturity, Av. life years, Coupon, Price, Lead Manager, Offer yield. Includes entries for U.S. DOLLARS, SWISS FRANCS, and D-MARKS.

U.S. \$100,000,000
Gulf + Western Intercontinental Investments N.V.
12 1/8% Guaranteed Notes Due 1989
Unconditionally Guaranteed as to Payment of Principal and Interest by
Gulf + Western Industries, Inc.
List of international banks and financial institutions including Kidder, Peabody International, Union Bank of Switzerland, Amro International, etc.

£40,000,000
Forsmarks Kraftgrupp Aktiebolag
(Incorporated in Sweden with limited liability)
Guaranteed Retractable Bonds 1989/94/99
Unconditionally guaranteed as to payment of principal and interest by
The Kingdom of Sweden
List of international banks and financial institutions including Baring Brothers & Co., County Bank Limited, Daiwa Europe Limited, etc.



INTERNATIONAL CAPITAL MARKETS AND COMPANIES

U.S. BONDS

Minor rally fails as uncertainty on economy returns

ONCE AGAIN the U.S. credit markets are in a state of flux. Last week saw a minor rally in the wake of the Federal Reserve Board's half point discount rate increase...

Table with 2 columns: U.S. INTEREST RATES (%), Week to Week, and Week to Week. Rows include Fed funds, 3-month T-bills, 6-month T-bills, 9-month T-bills, 12-month T-bills, AA Utility, and AA Industrial.

higher with the 6-month rate closing at 9.39 per cent. The high volatility of market rates and bond prices reflects renewed uncertainty about how to interpret the latest batch of U.S. economic statistics...

Dome Petroleum suffers record loss of C\$1.1bn

DOMNE PETROLEUM, the debt-ridden Canadian energy and natural resources group, suffered a loss of C\$1.05bn (U.S.\$865m) or C\$4.72 per common share in 1983...

GM seeks rise in share base

GENERAL MOTORS, the biggest U.S. carmaker, is to seek shareholder approval for a rise in the number of its authorised common shares to 1bn from 500m...

Advance in net earnings for IBM Deutschland

IBM DEUTSCHLAND, the West German subsidiary of the world's biggest computer concern, raised net profits in 1983 to DM 681m (\$360m) from DM 646m in the previous year...

Investment income lifts Zurich Insurance

ZURICH INSURANCE, the big Swiss insurance group, lifted 1983 net profits from Sfr 90.2m to Sfr 101.4m (\$48.7m), as a result of higher investment income and a reduction of write-offs on investments...

NTT plans \$7.6bn spending programme

NIPPON TELEPHONE and Telegraph, the Japanese government-owned telephone company, has announced a \$7.6bn (¥7.6trn) investment programme for the year which started on April 1...

Adsteam unit sells food assets

MELBOURNE — Peterborough Industries, a food subsidiary of Adelaide Steamship (Adsteam), has agreed to sell some of the frozen food assets recently acquired from Elders IXL to McCain Australia...

Senior post at Royal Bank of Scotland

ROYAL BANK OF SCOTLAND GROUP has received approval from the Australian Treasury to establish a joint office to represent the two main operating banks of the group in Australia...

Advance in net earnings for IBM Deutschland

IBM DEUTSCHLAND, the West German subsidiary of the world's biggest computer concern, raised net profits in 1983 to DM 681m (\$360m) from DM 646m in the previous year...

International Appointments

Mr Roland G. Ward has been appointed BANK OF AMERICA country manager for Switzerland. He was previously executive assistant to Mr Samuel Ammann, president of Bank of America...

International Appointments

Mr Becker succeeds Mr Edward F. Lacey, president and chairman of Ideal and Optimum Holdings, who is retiring. Mr Lacey will continue as chairman until the annual meeting in May...

Large table titled 'U.S. \$100,000,000 Arab Banking Corporation (B.S.C.)' and 'FT INTERNATIONAL BOND SERVICE'. It contains columns for various bond types (U.S. Dollar, Eurobond, etc.), issuers, and financial data like interest rates and yields.

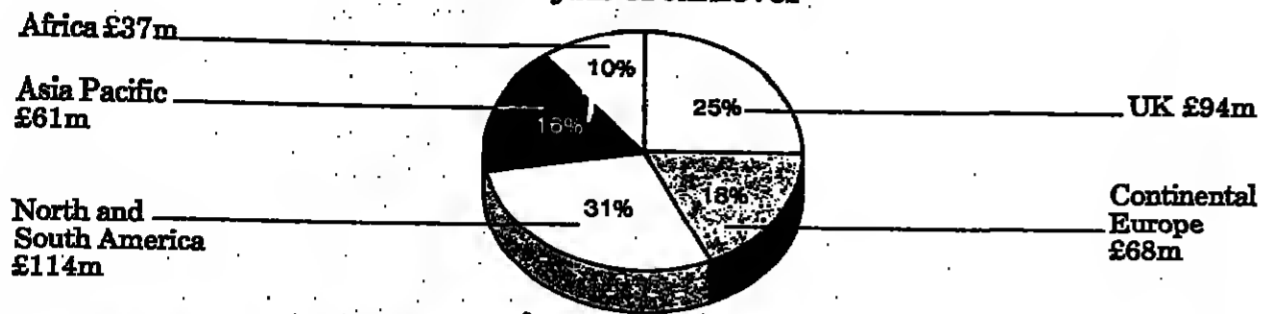
Handwritten signature or scribble at the bottom of the page.



# APV HOLDINGS

	1983	1982
Turnover	£374m	£339m
Profit before tax	£18.3m	£17.6m
Earnings per share: basic	34.1p	34.4p
diluted	32.0p	30.6p
Ordinary dividends	11.25p	10.5p

Analysis of turnover



### Extracts from the statement by the Chairman, Sir Ronald McIntosh KCB

Although there was no marked improvement in the demand for capital equipment, we achieved a modest increase in turnover and pre-tax profit in 1983.

The dividend has been increased for the seventeenth successive year. Our balance sheet has again strengthened; shareholders' funds have increased by £10 million to £114 million and the debt-equity ratio has been reduced to 10 per cent.

We continue to give the highest priority to the development of our technology and to foster innovation throughout the group.

Orders received in 1983 were 11 per cent up on 1982. We entered 1984 with an order book only slightly higher than 12 months previously but the prospects for growth in the major economies of the world seem to be improving and this should bring an increase in the demand for capital goods.

Several of our companies in Europe, the USA and elsewhere produced good results in 1983 and we expect most of them to do well again this year. So far as group profits for 1984 are concerned, much will clearly depend on the strength of the hoped-for recovery in demand for capital goods.

**APV — market leaders in advanced process plant for the food, beverage and chemical industries.**



**APV HOLDINGS PLC**  
APV House, Crawley, West Sussex RH10 1HH.

The AGM will be held on Tuesday 22 May 1984 at APV House, Crawley.

Copies of the Report and Accounts will be available after Monday 30 April 1984 from the Secretary.

The above figures are extracted from the full historical cost accounts of the group for the year ended 31 December 1983 on which the auditors have given an unqualified opinion. The full accounts will be filed with the Registrar of Companies after the Annual General Meeting.

This announcement appears as a matter of record only

March 1984



## U.S. \$107,000,000

**TERM CREDIT FACILITY**  
For Two Airbus Industrie A 310-200 Aircraft

Arranged by

**BANK OF AMERICA INTERNATIONAL LIMITED**  
**NATIONAL WESTMINSTER BANK GROUP**

Provided by

Bank of America NT&SA  
Bankers Trust Company, London Branch  
Banque Nationale de Paris Group  
Citibank N.A.  
The First National Bank of Chicago  
International Westminster Bank PLC  
Security Pacific National Bank  
Algemene Bank Nederland N.V., London Branch



**Bank of America**



**National Westminster Bank PLC**

New Issue

This announcement appears as a matter of record only.

April 13, 1984



## NEW ZEALAND

DM 250,000,000

7 1/2% Deutsche Mark Bearer Bonds of 1984/1991

Issue Price: 100% • Interest: 7 1/2% p.a., payable annually in arrears on April 14 • Redemption on April 14, 1991 at par • Denomination: DM 1,000 and DM 10,000 • Security: Negative Pledge Clause • Listing: Frankfurt/Main

COMMERZBANK  
AKTIENGESELLSCHAFT

S. G. WARBURG & CO. LTD.

AMRO INTERNATIONAL LIMITED

CREDIT LYONNAIS

DEUTSCHE BANK  
AKTIENGESELLSCHAFT

KIDDER, PEABODY INTERNATIONAL  
LIMITED

M. M. WARBURG-BRINCKMANN,  
WIRTZ & CO.

Abu Dhabi Investment Company  
Algemeine Bank Nederland N.V.  
Arab Banking Corporation (ABC)  
Julius Baer International Limited  
Banca Commerciale Italiana  
Banca del Gottardo  
Banca della Svizzera Italiana  
Banca Nazionale del Lavoro  
Banca di Roma  
Banca di Roma per la Svizzera S.A.  
Banco Uruguayo Hispano Americano Limited  
BankAmerica Investment Banking Group  
Bank für Gemeinwirtschaft  
Aktiengesellschaft  
Bank Leu International Ltd.  
Bank Mees & Hope NV  
Bank of New Zealand  
Banque Bruxelles Lambert S.A.  
Banque Française de Commerce Extérieur  
Banque Indosuez  
Banque Internationale à Luxembourg S.A.  
Banque Nationale de Paris  
Banque Paribas  
Banque de Paris et des Pays-Bas (Suisse) S.A.  
Banque Populaire Suisse S.A. Luxembourg  
Banque Privée S.A.  
Banque de l'Union Européenne  
Baring Brothers & Co., Limited  
Bayerische Hypotheken- und Wechsel-Bank  
Aktiengesellschaft  
Bayerische Landesbank Girozentrale  
Bayerische Vereinsbank Aktiengesellschaft  
Joh. Berenberg, Gossler & Co.  
Berliner Bank Aktiengesellschaft  
Berliner Handels- und Frankfurter Bank  
Bankhaus Gebrüder Bethmann  
Blyth Eastman Paine Webber  
International Limited  
Caisse des Dépôts et Consignations  
Chase Manhattan Capital Markets Group  
Chemical Bank International Limited  
CIBC Limited  
Citicorp Capital Markets Group  
Commerzbank International S.A.  
Commerzbank (South East Asia) Ltd.  
Copenhagen Handelsbank A/S  
County Bank Limited  
Creditaanstalt-Bankverein  
Crédit Commercial de France

Crédit Industriel et Commercial  
Credito Italiano  
Credit Suisse First Boston Limited  
Daiwa Europe Limited  
Delbrück & Co.  
Den Danske Bank af 1871 Aktieselskab  
Den norske Creditbank  
Deutsche Girozentrale  
— Deutsche Kommunalbank —  
DG Bank  
Deutsche Genossenschaftsbank  
Dillon, Read Overseas Corporation  
Dominion Securities Ames Limited  
Dresdner Bank Aktiengesellschaft  
Effenbank-Warburg  
Aktiengesellschaft  
Enskilda Securities  
Skandinaviska Enskilda Limited  
EuroPartners Securities Corporation  
European Banking Company  
Limited  
L'Européenne de Banque  
Girozentrale und Bank  
der österreichischen Sparkassen  
Aktiengesellschaft  
Goldman Sachs International Corp.  
Groupe des Banquiers Privés  
Genevois  
Hambros Bank Limited  
Hamburgische Landesbank  
Girozentrale  
Georg Hauck & Sohn Bankiers  
Kommanditgesellschaft auf Aktien  
Hessische Landesbank — Girozentrale —  
Hill Samuel & Co. Limited  
Industriehaus von Japan (Deutschland)  
Aktiengesellschaft  
Kansai-Osaka-Frankfurt  
Kleinwort, Benson Limited  
Kreditbank N.V.  
Kreditbank S.A. Luxembourg  
Kuwait Foreign Trading Contracting &  
Investment Co. (S.A.K.)  
Kuwait International Investment Co. s.a.k.  
Kuwait Investment Company (S.A.K.)  
Landesbank Rheinland-Pfalz  
— Girozentrale —  
Lazard Brothers & Co. Limited  
Lazard Frères et Cie

Lehman Brothers Kuhn Loeb  
International, Inc.  
Lloyds Bank International Limited  
ITCB International Limited  
Manufacturers Hanover Limited  
Metcalf, Finck & Co.  
Merrill Lynch Capital Markets  
B. Metzger seel. Sohn & Co.  
Samuel Montagu & Co. Limited  
Morgan Grenfell & Co. Limited  
Morgan Guaranty Ltd  
Morgan Stanley International  
The National Bank of New Zealand Ltd.  
Nederlandsche Middenstandsbank N.V.  
The Nikko Securities Co., (Europe) Ltd.  
Nomura International Limited  
Norddeutsche Landesbank  
Girozentrale  
Sal. Oppenheim jr. & Cie.  
Orion Royal Bank Limited  
Pierse, Halding & Pierson N.V.  
PK Christiania Bank (UK) Limited  
Privatbanken  
Renouf International (NZ) Limited  
N.M. Rothschild & Sons Limited  
Salomon Brothers International Limited  
J. Henry Schroder Wagg & Co. Limited  
Springsour, Kemp-Gez & Co.  
Smith Barney, Harris Upham & Co.  
Incorporated  
Société Générale  
Société Générale de Banque S.A.  
Svenska Handelsbanken Group  
Swiss Bank Corporation International  
Limited  
Tinkens & Burkhart  
Union Bank of Finland Ltd.  
Union Bank of Switzerland (Securities)  
Limited  
Verband Schweizerischer  
Kantonalbanken  
Verbind- und Westbank  
Aktiengesellschaft  
J. Vothel & Co.  
Wardley  
Westfälische Landesbank Girozentrale  
Westfälische Aktiengesellschaft  
Wood Gundy Limited  
Yamaichi International (Europe) Limited

All of these Notes having been sold, this announcement appears as a matter of record only.



## BARCLAYS OVERSEAS INVESTMENT COMPANY B.V.

(Incorporated with limited liability in the Netherlands)

U.S. \$350,000,000  
Guaranteed Floating Rate Notes due 2004

Guaranteed on a subordinated basis by

## BARCLAYS BANK INTERNATIONAL LIMITED

(Incorporated with limited liability in England)

Barclays Merchant Bank Limited

Lehman Brothers Kuhn Loeb International, Inc.  
S. G. Warburg & Co. Ltd.  
Algemene Bank Nederland N.V.  
Banque Bruxelles Lambert S.A.  
Banque Internationale à Luxembourg S.A.  
Banque Nationale de Paris  
Credit Suisse First Boston Limited  
Dresdner Bank Aktiengesellschaft  
Goldman Sachs International Corp.  
Morgan Grenfell & Co. Limited  
Salomon Brothers International  
Sumitomo Finance International  
Swiss Bank Corporation International Limited  
Union Bank of Switzerland (Securities) Limited

2nd March, 1984



UK COMPANY NEWS

RECENT ISSUES

Markheath Securities tops £2m

A PROFIT increase from £1.53m to £2.07m for 1983 is reported by Markheath Securities, the commercial and residential property developer. The final dividend is the forecast 5.2p for a net total of 8.75p.

Arrow Chemical well up after strong second half

TRADING conditions did not improve significantly for Arrow Chemical Holdings in 1983, but it pushed up its turnover from £6.36m to £7.3m and its profit before tax from £360,000 to £516,000. The final dividend is the promised 1.1p on capital is created by the rights issue, for a total of 1.6p, against 1p.

BOARD MEETINGS

Table listing board meetings for various companies including Arrow Chemical, British Petroleum, and others, with dates and locations.

Plantation & Gen. seeks full listing

BY ALISON HOGAN

Plantation & General Investments, the shares of which are presently traded under Rule 163(2), is moving up to a full listing by way of an introduction, arranged by Sheppards and Chase.

The company used to be mainly an investment company, but with the acquisition of a majority stake in Telfos an engineering business based in the UK, it has sufficient trading profits to be eligible for a full quotation.

HOW A LEADING SWISS BANK ASSESSES THE YEN FOR INTERNATIONAL INVESTORS. Text discussing the Japanese economy and investment opportunities.

In recent years, Japan has consistently out-performed all other major industrial countries in terms of economic growth. And the outlook for continued healthy growth in Japan continues to be attractive for internationally diversified investors.

the U.S., and on a par with that of all major European markets combined. Multicurrency investors seeking high total returns should therefore seriously examine the advantages of including a meaningful proportion of yen-denominated instruments in their currency mix.

The Julius Baer Group One of Switzerland's most experienced and prestigious private banking organizations, The Julius Baer Group has served the needs of international investors since the late 19th century.

professional assessment of investment opportunities in the Far East, especially Japan, and their implications for multicurrency investors. We invite you to write today for a complimentary copy.

Chemical Methods in loss

LOSSES were incurred by Chemical Methods Associates in the second half of calendar 1983 resulting in an overall full-year deficit of £24,000 (£101,000).

compared with \$9.0m in 1982, when profits of \$365,000 were achieved. Another event during the year was Chemical's unique offer to shareholders. Using a sale-or-return technique, the company offered holders their money back, or those declining the option, dividends which would amount to a return of 10 per cent on their investment this year and next.

COMPANY NEWS IN BRIEF

A SUBSTANTIAL fall in exports, plus the cost of ending its marine diesel engine production, is likely to push Associated British Engineering into loss for the first time since 1975. Mr A. Ross Belch, chairman, says progress by the company, which is involved in distribution, electrical engineering and diesel power, has not been maintained during the second half.

Table of EQUITIES with columns for Issue Price, Annual Dividend, 1984 High/Low, Stock Name, and various financial metrics.

Table of FIXED INTEREST STOCKS with columns for Issue Price, Annual Dividend, 1984 High/Low, Stock Name, and various financial metrics.

Table of RIGHTS OFFERS with columns for Issue Price, Annual Dividend, 1984 High/Low, Stock Name, and various financial metrics.

Replication data usually last day for dealing free of stamp duty. Figures based on prospectus estimates, if dividend not paid or payable on part of capital, cover based on dividend on full capital. Assumed dividend and yield, if forecast, dividend cover based on previous year's earnings.

PENDING DIVIDENDS

Table listing pending dividends for various companies, including dates of announcements and amounts.

JB BANK JULIUS BAER

Advertisement for JB Bank Julius Baer, highlighting Swiss craftsmanship in international investment and offering negotiable floating rate dollar certificates.

Advertisement for National Westminster Bank PLC, offering floating rate capital notes with a U.S. \$100,000,000 denomination.

Advertisement for State Bank of India, offering negotiable floating rate dollar certificates of deposit due 1987.

NOTICE TO ICI SHAREHOLDERS. Statement issued by the Association of Management and Professional Staffs on behalf of ICI Managers regarding the company's financial position and management changes.

ROTHSCHILD ASSET MANAGEMENT (CI) advertisement, listing services and contact information for international reserves limited.

3i Term Deposits advertisement, offering deposits of £1,000-£50,000 with interest rates ranging from 9% to 10%.

Die Erste Osterreichische Spar-Casse-Bank advertisement, offering US\$40,000,000 in subordinated floating rate notes due 1992.

FINANCIAL TIMES STOCK INDICES table showing performance metrics for various sectors like Government Secs, Fixed Interest, Industrial Ord, Gold Mines, FT Act. All-Share, and FT-SE 100 from April 10 to April 13, 1984.

Handwritten signature or note at the bottom of the page.



This announcement appears as a matter of record only



# Régie Autonome des Transports Parisiens

## ECU 60,000,000 Guaranteed Bonds

comprising

ECU 40,000,000 10% per cent. Guaranteed Bonds due 1992

ECU 20,000,000 11 per cent. Guaranteed Bonds due 1994

Unconditionally guaranteed by  
The Republic of France

Crédit Lyonnais Banque Bruxelles Lambert S.A.  
Crédit Commercial de France

Algemene Bank Nederland N.V. Banque Indosuez Banque Internationale à Luxembourg S.A.  
Caisse des Dépôts et Consignations Commerzbank Aktiengesellschaft  
Crédit Communal de Belgique S.A./Gemeentekrediet van België N.V. Daiwa Europe Limited  
Caisse Centrale des Banques de Paris Citicorp Capital Markets Group C.N. Oyens & Van Sighem N.V. Compagnie Monégasque de Banque  
Istituto Bancario San Paolo di Torino Kredietbank International Group Merrill Lynch Capital Markets  
Nippon European Bank S.A. - LTCB Group Nomura International Limited Société Générale de Banque S.A.

Al Saudi Banque Amro International Limited Banca Commerciale Italiana Banca del Gottardo Banco di Roma Bank/Banque Ippa  
Bank für Gemeinwirtschaft Aktiengesellschaft Bank Gutzwiler, Kurz, Burgener (Overseas) Limited Bank of Tokyo International Limited  
Banque du Bénin S.A. Banque Française du Commerce Extérieur Banque Générale du Luxembourg S.A. Banque Nationale de Paris Banque Paribas  
Banque Paribas Belgique S.A. Banque Privée de Gestion Financière «B.P.G.F.» Banque de l'Union Européenne Banque Worms  
Bayerische Hypothek- und Wechselbank Aktiengesellschaft Bayerische Vereinsbank Aktiengesellschaft Berliner Handels- und Frankfurter Bank  
Caisse d'Epargne de l'Etat Banque de l'Etat Luxembourg Cera - Centrale Raiffeisen C.V. - Belgium  
Chase Manhattan Capital Markets Group Chase Manhattan Limited Citicorp Capital Markets Group C.N. Oyens & Van Sighem N.V. Compagnie Monégasque de Banque  
Copenhagen Handelsbank A/S County Bank Limited Creditanstalt-Bankverein Credit European S.A. Luxembourg Credit Général S.A. de Banque  
Crédit Industriel d'Alsace et de Lorraine Crédit Industriel et Commercial Crédit du Nord Credito Italiano Dai-ichi Kangyo International Limited  
Den Danske Bank International S.A. Den norske Creditbank (Luxembourg) S.A. S.A. Dewfin N.V. Dominione Securities Ames Limited  
Dresdner Bank Aktiengesellschaft Enkilda Securities Scandinavia Enkilda Limited Hambros Bank Limited Hesseische Landesbank - Girozentrale  
Girozentrale und Bank der österreichischen Sparkassen Aktiengesellschaft Citibank Hesseische Landesbank - Girozentrale  
IBU International Limited Kleinwort, Benson Limited Lazard Frères et Co Lehman Brothers Kuhn Loeb International, Inc.  
Lloyds Bank International Limited Mitsubishi Finance International Limited Mitsui Finance Europe Limited Morgan Guaranty Ltd  
Morgan Stanley International Nederlandse Middenstandsbank nv Nederlandse Creditbank nv The Nikko Securities Co. (Europe) Ltd.  
Norddeutsche Landesbank Girozentrale Orion Royal Bank Limited PK Christiana Bank (UK) Ltd. Poszanowski Privatbanken A/S Rabobank Nederland  
Salomon Brothers International Sanwa Bank (Underwriters) Limited Société Européenne de Banque S.A. Società Generale  
Societe Generale Alsacienne de Banque, Luxembourg Societe Séguaise de Banque Sparebanken Oslo Avershus Sparekassen SDS  
Sumitomo Finance International Sumitomo Trust International Limited Svenska Handelsbanken Group Swiss Bank Corporation International Limited  
The Taiyo Kobe Bank (Luxembourg) S.A. Union Bank of Finland Ltd. Union Bank of Switzerland (Securities) Limited Union de Banques Arabes et Françaises - U.B.A.F.  
S.G. Warburg & Co. Ltd. Westdeutsche Landesbank Girozentrale Wood Gundy Limited Yamachi International (Europe) Limited Yasuda Trust Europe Limited

April 4, 1984

# THE ROYAL BANK OF CANADA

## NOTICE OF PARTIAL REDEMPTION

### TO THE HOLDERS OF 10% DEBENTURES DUE MAY 15, 1994 OF THE ROYAL BANK OF CANADA

NOTICE IS HEREBY GIVEN, pursuant to the provisions of the Trust Indenture bearing formal date of April 15th, 1971 (as supplemented) and to the Eighth Supplemental Trust Indenture bearing formal date of May 3rd, 1979 (herein collectively referred to as the "Trust Indenture") between The Royal Bank of Canada (herein referred to as the "Bank") and Montreal Trust Company (herein referred to as the "Trustee"), as Trustee, providing inter alia for the creation and issue of 10% Debentures of the Bank, that C\$1,500,000 aggregate principal amount of 10% Debentures due May 15th, 1994 of the Bank in coupon bearer form in the denomination of C\$1,000 each bearing the distinguishing letter "L" and the under-mentioned distinguishing numbers, namely:

22	2200	4443	6437	6245	1021	12477	14395	16361	18688	20534	22016	23621	25766	27675	29478	31286	32935	34856	36647	38439
47	2223	4486	6461	6283	10272	12481	14378	16433	18707	20338	22045	23872	26796	27713	29433	31272	32843	34896	36699	38441
60	2273	4579	6552	6320	10304	12495	14386	16440	18714	20345	22052	23879	26803	27720	29440	31279	32850	34903	36706	38448
73	2298	4626	6600	6371	10341	12511	14411	16465	18739	20370	22077	23904	26828	27745	29465	31304	32875	34928	36731	38473
100	2348	4677	6655	6426	10383	12523	14427	16481	18755	20386	22093	23920	26844	27761	29481	31320	32891	34944	36747	38489
127	2398	4728	6706	6477	10425	12535	14443	16503	18777	20408	22115	23942	26866	27783	29503	31342	32913	34966	36769	38511
154	2448	4779	6757	6528	10467	12547	14459	16525	18800	20429	22136	23963	26890	27807	29524	31363	32934	34987	36790	38532
181	2498	4830	6808	6579	10509	12559	14475	16547	18822	20450	22157	23984	26916	27833	29545	31384	32955	35010	36813	38553
208	2548	4881	6859	6630	10551	12571	14491	16569	18844	20471	22178	24011	26942	27864	29566	31405	32976	35031	36834	38574
235	2598	4932	6910	6681	10593	12583	14507	16591	18866	20492	22199	24032	26964	27885	29587	31426	33007	35052	36855	38595
262	2648	4983	6961	6732	10635	12595	14523	16613	18888	20513	22220	24053	26986	27907	29608	31447	33028	35073	36876	38616
289	2698	5034	6999	6783	10677	12607	14539	16635	18910	20534	22241	24074	27008	27929	29629	31468	33049	35094	36897	38637
316	2748	5085	7050	6834	10719	12619	14555	16657	18932	20555	22262	24095	27030	27951	29650	31489	33070	35115	36918	38658
343	2798	5136	7099	6885	10761	12631	14571	16679	18954	20576	22283	24116	27051	27972	29671	31510	33091	35136	36939	38679
370	2848	5187	7148	6936	10803	12643	14587	16701	18976	20597	22304	24137	27072	28003	29692	31531	33112	35157	36960	38699
397	2898	5238	7197	6987	10845	12655	14603	16723	19008	20618	22325	24158	27093	28024	29713	31552	33133	35178	36981	38720
424	2948	5289	7246	7038	10887	12667	14619	16745	19030	20639	22346	24179	27114	28045	29734	31573	33154	35203	37002	38741
451	2998	5340	7295	7089	10929	12679	14635	16767	19052	20660	22367	24200	27135	28066	29755	31594	33175	35224	37023	38762
478	3048	5391	7344	7140	10971	12691	14651	16789	19074	20681	22388	24221	27156	28087	29776	31615	33196	35245	37044	38783
505	3098	5442	7393	7191	11013	12703	14667	16811	19096	20702	22409	24242	27177	28108	29797	31636	33217	35266	37065	38804
532	3148	5493	7442	7242	11055	12715	14683	16833	19118	20723	22430	24263	27198	28129	29818	31657	33238	35287	37086	38825
559	3198	5544	7491	7293	11097	12727	14699	16855	19140	20744	22451	24284	27219	28150	29839	31678	33259	35308	37107	38846
586	3248	5595	7540	7344	11139	12739	14715	16877	19162	20765	22472	24305	27240	28171	29860	31699	33280	35329	37128	38867
613	3298	5646	7589	7395	11181	12751	14731	16899	19184	20786	22493	24326	27261	28192	29881	31720	33301	35350	37149	38888
640	3348	5697	7638	7446	11223	12763	14747	16921	19206	20807	22514	24347	27282	28213	29902	31741	33322	35371	37170	38909
667	3398	5748	7687	7497	11265	12775	14763	16943	19228	20828	22535	24368	27303	28234	29923	31762	33343	35392	37191	38930
694	3448	5799	7736	7548	11307	12787	14779	16965	19250	20849	22556	24389	27324	28255	29944	31783	33364	35413	37212	38951
721	3498	5850	7785	7599	11349	12799	14795	16987	19272	20870	22577	24410	27345	28276	29965	31804	33385	35434	37233	38972
748	3548	5901	7834	7650	11391	12811	14811	17009	19294	20891	22598	24431	27366	28297	29986	31825	33406	35455	37254	38993
775	3598	5952	7883	7701	11433	12823	14827	17031	19316	20912	22619	24452	27387	28318	30007	31846	33427	35476	37275	39014
802	3648	6003	7932	7752	11475	12835	14843	17053	19338	20933	22640	24473	27408	28339	30028	31867	33448	35497	37296	39035
829	3698	6054	7981	7803	11517	12847	14859	17075	19360	20954	22661	24494	27429	28360	30049	31888	33469	35518	37317	39056
856	3748	6105	8030	7854	11559	12859	14875	17097	19382	20975	22682	24515	27450	28381	30070	31909	33490	35539	37338	39077
883	3798	6156	8079	7905	11601	12871	14891	17119	19404	21007	22703	24536	27471	28402	30091	31930	33511	35560	37359	39098
910	3848	6207	8128	7956	11643	12883	14907	17141	19426	21028	22724	24557	27492	28423	30112	31951	33532	35581	37380	39119
937	3898	6258	8177	8007	11685	12895	14923	17163	19448	21049	22745	24578	27513	28444	30133	31972	33553	35602	37401	39140
964	3948	6309	8226	8058	11727	12907	14939	17185	19470	21070	22766	24599	27534	28465	30154	31993	33574	35623	37422	39161
991	3998	6360	8275	8109	11769	12919	14955	17207	19492	21091	22787	24620	27555	28486	30175	32014	33595	35644	37443	39182
1018	4048	6411	8324	8160	11811	12931	14971	17229	19514	21112	22808	24641	27576	28507	30196	32035	33616	35665	37464	39203
1045	4098	6462	8373	8211	11853	12943	14987	17251	19536	21133	22829	24662	27597	28528	30217	32056	33637	35686	37485	39224
1072	4148	6513	8422	8262	11895	12955	15003	17273	19558	21154	22850	24683	27618	28549	30238	32077	33658	35707	37506	39245
1100	4198	6564	8471	8313	11937	12967	15019	17295	19580	21175	22871	24704	27639	28570	30259	32098	33679	35728	37527	39266
1127	4248	6615	8520	8364	11979	12979	15035	17317	19602	21196	22892	24725	27660	28591	30280	32119	33700	35749	37548	39287
1154	4298	6666	8569	8415	12021	12991	15051	17339	19624	21217	22913	24746	27681	28612	30301	32140	33721	35770	37569	39308
1182	4348	6717	8618	8466	12063	13003	15067	17361	19646	21238	22934	24767	27702	28633	30322	32161	33742	35791	37590	39329
1209	4398	6768	8667	8517	12105	13015	15083	17383	19668	21259	22955	24788	27723	28654	30343	32182	33763	35812	37611	39350
1236	4448	6819	8716	8568	12147	13027	15100	17405	19690	21280	22976	24809	27744	28675	30364	32203	33784	35833	37632	39371
1264	4498	6870	8765	8619	12189	13039	15116	17427	19712	21301	22997	24830	27765	28696	30385	32224	33805	35854	37653	39392
1291	4548	6921	8814	8670	12231	13051	15132	17449	19734	21322	23018	24851	27786	28717	30406	32245	33826	35875	37674	39413
1318	4598	6972	8863	8721	12273	13063	15148	17471	19756	21343	23039	24872	27807	28738	30427	32266	33847	35896	37695	39434
1346	4648	7023	8912	8772	12315	13075	15164	17493	19778	21364	23060	24893								







AMERICAN STOCK EXCHANGE COMPOSITE CLOSING PRICES

Closing prices April 13

Table of American Stock Exchange Composite Closing Prices for April 13, 1984. Columns include 12 Month High/Low, Stock Name, Div. Yld., P/E, 100s, and Price Change. Rows are organized by sector: A-C-C, D-D-D, E-E-E, F-F-F, G-G-G, H-H-H, I-I-I, J-J-J, K-K-K, L-L-L, M-M-M, N-N-N, O-O-O, P-P-P, Q-Q-Q, R-R-R, S-S-S, T-T-T, U-U-U, V-V-V, W-W-W, X-X-X, Y-Y-Y, Z-Z-Z.

Continued on Page 28

NEW YORK STOCK EXCHANGE COMPOSITE CLOSING PRICES

Table of New York Stock Exchange Composite Closing Prices for April 13, 1984. Columns include 12 Month High/Low, Stock Name, Div. Yld., P/E, 100s, and Price Change. Rows are organized by sector: A-C-C, D-D-D, E-E-E, F-F-F, G-G-G, H-H-H, I-I-I, J-J-J, K-K-K, L-L-L, M-M-M, N-N-N, O-O-O, P-P-P, Q-Q-Q, R-R-R, S-S-S, T-T-T, U-U-U, V-V-V, W-W-W, X-X-X, Y-Y-Y, Z-Z-Z.

Continued on Page 28

Notes and disclaimers regarding the data provided in the tables, including information about the source of the data and the accuracy of the figures.







Old Court Currency Fund Limited



This document includes particulars given in compliance with the Regulations of the Council of The Stock Exchange for the purpose of giving information with regard to the Company. The Directors have taken all reasonable care to ensure that the facts stated herein are true and accurate in all material respects and that there are no other material facts the omission of which would make misleading any statement herein whether of fact or of opinion. All the Directors accept responsibility accordingly. Application has been made to the Council of The Stock Exchange for the Shares of each class of the Company available to be allotted to be admitted to the Official List. Copies of this Prospectus and of the documents specified herein have been delivered for registration to the Registrar of Companies in England.

# Old Court Currency Fund Limited

A company registered with limited liability in the Cayman Islands on 22nd March, 1984 under the provisions of the Companies Law Cap. 22 of the Cayman Islands as amended and having an authorised share capital of U.S.\$500,100

The Company's Manager is N. M. Rothschild Asset Management (C.I.) Limited (the "Manager"),  
a wholly owned subsidiary of

**N. M. Rothschild & Sons Limited**

**Initial Offer for Subscription**

**of up to 50,000,000 Participating Redeemable Preference Shares of U.S. 1 cent each ("Shares") of the following classes and at the following prices payable in full on application.**

**Classes of Shares and price per Share**

Australian Dollar Shares	A.515	Japanese Yen Shares	¥ 3,500
Belgian Franc Shares (Financial)	Fin. B. Fr. 800	Singapore Dollar Shares	S.530
Canadian Dollar Shares	Can. \$20	Sterling Shares	£10
Danish Krone Shares	D. Kr. 150	Swiss Franc Shares	Sw. Fr. 30
Deutschemark Shares	DM.40	United States Dollar Shares	U.S.\$15
Dutch Guilder Shares	Fls. 50		
French Franc Shares	F. Fr. 100		
Hong Kong Dollar Shares	H.K.\$100		
Italian Lira Shares	Lit. 25,000		

The distribution of this Prospectus and the offering of Shares may be restricted in certain jurisdictions; persons into whose possession this Prospectus comes are required by Old Court Currency Fund Limited (the "Company") and N. M. Rothschild Asset Management (C.I.) Limited (the "Manager") to inform themselves of and to observe any such restrictions. This Prospectus does not constitute an offer or solicitation in any jurisdiction in which such offer is not authorised or in any person to whom it is unlawful to make such offer or solicitation. In particular, this Prospectus does not constitute and shall not be construed as an invitation to the public of the Cayman Islands to subscribe for Shares.

No person has been authorised to give any information or to make any representations, other than those contained in this Prospectus, in connection with the offering of Shares and, if given or made, such information or representations shall be relied on as having been authorised by the Company or by the Manager. Neither the delivery of this Prospectus nor the allotment or issue of Shares shall, under any circumstances, create any implication that there has been no change in the offer of the Company since the date hereof.

The content of the Prospectus and the offering of Shares is subject to the Control of Borrowing (Borrowing of Guernsey) Ordinance 1976 to 1978 has been obtained for the issue of up to 50,000,000 Unclassified Shares of U.S. 1 cent each either on Demand Shares or as Shares in the Company. It may be differently understood than in giving this consent the Committee takes no responsibility for the financial soundness of any schemes or for the correctness of any of the statements made or opinions expressed with regard to them.

Shares may not be acquired or held beneficially by any person resident for tax purposes in Guernsey, Alderney or Herm.

The Shares have not been registered under the United States Securities Act of 1933 and, except in a transaction which does not violate such Act, may not be directly or indirectly offered or sold in the United States of America (including its territories, possessions and areas subject to its jurisdiction) or to or for the benefit of a United States person. For this purpose, United States person includes a national or resident of the United States of America, a partnership organized or existing in any state, territory or possession of the United States of America, a corporation organized under the laws of the United States of America or of any state, territory or possession thereof, or any estate or trust, other than one exempt from or treated as exempt from the income tax of the United States of America which is not effectively connected with the conduct of trade or business within the United States of America) is not included in gross income for the purposes of computing United States federal income tax. The attention of United States persons is drawn to the paragraph headed "Restrictions on Holdings" set out below and the compulsory redemption powers of the Company mentioned therein.

This Prospectus does not constitute an offer of Shares for subscription at any time after 30th April, 1984.

Copies of this Prospectus, subsequent Prospectuses and Application Forms may be obtained from the Company, c/o N. M. Rothschild Asset Management (C.I.) Limited, P.O. Box 242, St. Julian's Court, St. Peter Port, Guernsey, Channel Islands. Telephone: Guernsey (0481) 26741 & 26331. Fax: 4191673 & 4191507.

**DIRECTORS**

Leopold de Rothschild (Chairman),  
New Court, St. Swithin's Lane, London EC4P 4DU, Executive Director of N. M. Rothschild & Sons Limited, London.

Trevor Ash,  
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands, Manager of N. M. Rothschild & Sons (C.I.) Limited and a Director of N. M. Rothschild Asset Management (C.I.) Limited, Guernsey, Channel Islands.

Graham Barker,  
New Court, St. Swithin's Lane, London EC4P 4DU, Executive Director of N. M. Rothschild & Sons Limited, London and a Director of N. M. Rothschild Asset Management (C.I.) Limited, Guernsey, Channel Islands.

Henry Broughton,  
Ingleside, Croule Hill Road, St. Peter Port, Guernsey, Channel Islands, Former Chairman of The Investment Trust of Guernsey Limited and former Senior Partner of Black, Geoghegan & Till, Chartered Accountants.

Alan Graham,  
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands, Assistant Director of N. M. Rothschild & Sons Limited, London and Executive Director of N. M. Rothschild & Sons (C.I.) Limited, Guernsey, Channel Islands.

Richard Katz,  
New Court, St. Swithin's Lane, London EC4P 4DU, Executive Director of N. M. Rothschild & Sons (C.I.) Limited, Guernsey, Channel Islands.

Percy Ozanne,  
The Emeralds, Longue Rue, Vale, Guernsey, Channel Islands, Advocate of the Royal Court of Guernsey, and a Consultant to and former Senior Partner of Ozanne, van Leuven & Perrot, Advocates.

Charles Tracy,  
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands, Managing Director of N. M. Rothschild & Sons (C.I.) Limited and a Director of N. M. Rothschild Asset Management (C.I.) Limited, Guernsey, Channel Islands.

John Vine,  
St. Julian's Court, St. Peter Port, Guernsey, Channel Islands, Vice-Chairman of N. M. Rothschild & Sons (C.I.) Limited and a Director of N. M. Rothschild Asset Management (C.I.) Limited, Guernsey, Channel Islands.

**REGISTERED OFFICE**  
P.O. Box 309, Grand Cayman, British West Indies.

**MANAGER, REGISTRAR & SECRETARY**  
N. M. Rothschild Asset Management (C.I.) Limited,  
P.O. Box 242, St. Julian's Court, St. Peter Port, Guernsey, Channel Islands.  
Telephone: Guernsey (0481) 26741 & 26331  
Telex: 4191673 & 4191507

**BANKERS & CUSTODIAN**  
N. M. Rothschild & Sons (C.I.) Limited,  
P.O. Box 58, St. Julian's Court, St. Peter Port, Guernsey, Channel Islands.

**AUDITORS**  
Peat, Marwick, Mitchell & Co., Chartered Accountants,  
10 LeFebvre Street, St. Peter Port, Guernsey, Channel Islands.

**STOCKBROKERS**  
de Zoete & Bevan,  
25 Finsbury Avenue, London EC2M 7EE, England.

**LEGAL ADVISERS TO THE COMPANY**  
In the Cayman Islands: Maples & Calder, Attorneys-at-Law,  
P.O. Box 309, Grand Cayman, British West Indies.  
In England: Linklaters & Paines,  
Barrington House, 59-67 Gresham Street,  
London EC2V 7JA, England.  
In Guernsey: Ozanne, van Leuven & Perrot,  
P.O. Box 186, 1 Le Marchant Street, St. Peter Port, Guernsey, Channel Islands.

**LEGAL ADVISERS TO THE MANAGER**  
Ashurst, Morris, Crisp & Co.,  
Broadgate House, 7 Eldon Street, London EC2M 7HD, England.

**FINANCIAL OPERATIONS**

**ALLOTMENT OF SHARES**  
The initial subscription lists will open at 9.00 a.m. in Guernsey on 30th April, 1984 and will close at 10.00 a.m. on that day. Settlement will be due on 4th May 1984, and provided that settlement has been effected, allotments will be made on that day.

After the initial offer, application for Shares of each class may be made on any Dealing Day.

Application may be made either by fax or on the application form at the end of this Prospectus. Payment may be made in any of the currencies (except Japanese Yen) listed below. Full details of the application and payment procedure are set out below. Shares will be issued in registered form.

**INVESTMENT POLICY**  
The Company's investments ("Investments") in each Currency Fund will consist principally of deposits. In certain circumstances these may be supplemented by bonds, notes and money-market instruments if a more attractive return is available from these investments. No investments will be made which mature in more than twelve months. The normal policy will be to hold investments with maturity.

A minimum of 20 per cent. of the value of the Investments in each Currency Fund will normally be available at seven days' notice or less (except to the extent that this percentage is reduced by redemptions and conversions, when the intention will be to reinstate the liquidity margin as soon as circumstances permit). This policy is intended to provide sufficient funds to enable redemptions and conversions to be effected without the premature realisation of Investments.

A conservative credit assessment policy will be pursued. Specific limits will be established for each bank and institution with which the Company invests. Such limits are designed to ensure that there is a prudent spread of risk in each Currency Fund, except that this policy will not require the Company to make any investment which is less than the equivalent of U.S.\$0.50m. Investments will only be made with banks and institutions of the highest standing.

For each Currency Fund the Company will make Investments payable in the currency in which the Shares of that class are designated. However, in any such Currency Fund the Company may purchase Investments payable in another currency provided that a forward currency sale of the principal amount of the investment, plus the expected interest to maturity, is undertaken. In this way the Company may take advantage of opportunities to maximise the return for a particular currency while pursuing the principle that there should be no currency risk within each Currency Fund.

**DIVIDEND POLICY**  
It is intended that the whole of the net income of the Company, after deduction of expenses, attributable to each class of Shares will be distributed.

Distributions will be made by way of half-yearly dividends payable on 30th June and 31st December in each year, commencing on 31st December, 1984. Shareholders may elect to receive their dividends in any of the currencies listed below.

Shareholders may also elect to have their dividends automatically reinvested in further Shares on the Dealing Day next following the date on which the dividend will be payable by completing the appropriate section on the Conversion Form. Shares allotted on account of the reinvestment of dividends will be registered in the name of the Shareholder and a Share Certificate for such new Shares will be sent to the Shareholder at his risk normally within two weeks of the appropriate Dealing Day.

**THE MANAGER**  
N. M. Rothschild Asset Management (C.I.) Limited has been appointed to manage the Investments of each Currency Fund, to undertake the Company's administration and to act as Registrar and Secretary under a Management Agreement, particulars of which are set out below.

N. M. Rothschild Asset Management (C.I.) Limited, which is a wholly-owned subsidiary of N. M. Rothschild & Sons Limited, London, acts as the manager of substantial unit trusts and other similar funds in Guernsey.

**CURRENCY FUNDS**  
The assets and liabilities and income and expenditure allocated in each class of Share will be applied in the Currency Fund relating to that particular class of Share. The Manager will normally allocate the liabilities of the Company in the Currency Fund to which they relate or, if they do not relate to any particular Currency Fund, between all the Currency Funds pro rata to their net asset value. However, there may be exceptional circumstances in which the Manager with the approval of the Auditors will be obliged to allocate them in a different way - for example if the assets of a particular Currency Fund are inadequate to meet its liabilities. Certain powers are also given to the Liquidator in this regard in the event of the Company being wound up.

**PRICES, SETTLEMENT AND VALUATIONS**  
After the initial offer, the prices at which Shares of each class will be provisionally allotted and redeemed will be calculated on each Dealing Day. The day on which settlement is due ("Settlement Day") will normally be two business days after the relevant Dealing Day. The prices on each Dealing Day will be calculated by reference to the projected value of the net assets of the relevant Currency Fund as at the Settlement Day on the basis of information available on the Dealing Day. There will normally be a single price for the allotment and redemption of Shares of each class.

As the normal policy will be to hold most Investments until maturity, the Investments comprised within each Currency Fund will be valued on a straight line basis, i.e. the total return achieved by holding each Investment to maturity will be calculated and the appropriate portion will be added to its value day by day.

However, the Manager in its discretion, subject to the approval of the Auditors, reserves the right to value the Investments in any Currency Fund on a different basis, should this be considered more equitable. For example, in the event of a major change in interest rates or in the event of a likely capital loss, the valuation basis of the Investments of the affected might be adjusted to reflect their market values. The full valuation provisions are contained in the Company's Articles of Association which are available for public inspection and copies of which are available on request.

In the event of the relevant foreign exchange or banking markets being closed, the Settlement Day and the issue and redemption prices for Shares where payment is to be tendered in a currency other than that to which the Shares are designated, will differ from those applicable where payment is to be made in the same currency.

Further information on pricing is contained to section 1 of General Information set out below.

**JAPANESE YEN CLASS OF SHARES**  
In order to comply with Japanese Ministry of Finance requirements the subscription and redemption monies of the Japanese Yen Class of Shares cannot be paid in yen but must be paid in any of the currencies listed below chosen by the investor. The Investments held in the Japanese Yen Currency Fund will, however, at all times be maintained in or by reference to yen.

**CHARGES AND FEES**  
There is no charge for buying, selling or converting Shares. The Manager will receive for its services out of the respective Currency Funds an aggregate monthly fee of 4 per cent. of the value of the net assets of each Currency Fund as managed for calculating Share prices. This fee cannot be increased without the agreement of Shareholders in a General Meeting. The Manager's out of pocket expenses in relation to its services to the Company will also be borne out of the Currency Funds.

**PRINCIPAL FEATURES**

**STRUCTURE**  
Old Court Currency Fund Limited is an open-ended investment company registered in the Cayman Islands and managed in Guernsey.

**OBJECTIVE**  
The Company's objective is to provide a wholesale rate of return for liquid funds in a currency chosen by the investor with the opportunity to convert at any time between currencies at inter-bank rates of foreign exchange.

**CLASSES OF SHARES AND CURRENCIES**  
There are fourteen different classes of Shares: one for each of the fourteen currencies listed below under "Correspondent Banks". A separate fund ("Currency Fund") will be maintained for each class of Shares. Each Currency Fund will have a portfolio of assets related to its respective currency. Thus there will be no currency risk within each Currency Fund; however, on investing in a currency other than the Shareholder's own currency, the investment will be subject to the movement of foreign exchange rates.

**INVESTMENT POLICY**  
Within a conservative approach to credit assessment, the Company's policy will be to invest in deposits maturing in not more than twelve months.

**ALLOTMENT AND REDEMPTION OF SHARES**  
Shares may be applied for on any business day in Guernsey ("Dealing Day") and may be redeemed on any Dealing Day subject to seven days' notice. Settlement will take place in accordance with euromarket practice, which is normally two business days later.

**CONVERSION OF SHARES**  
Shareholders can elect to convert from one class to another. Usually this can be done immediately by a telephone call to the Manager in Guernsey who can quote the rates for conversion.

**SHARE PRICES AND VALUATIONS**  
There will be a single price for the allotment and redemption of Shares of each class which is calculated by reference to the value of the net assets of the relative Currency Fund.

**INCOME**  
The income accruing to each class of Share will be paid as a dividend on 30th June and 31st December in each year, commencing on 31st December, 1984. Shareholders may elect to have their dividends automatically reinvested in further Shares.

**CHARGES**  
There is no initial sales charge. The Manager will charge a fee of 1 per cent. per month on the net asset value of the Company.

**TAXATION**  
It is the aim of the Company not to incur any tax on its income. It is expected that the Company will qualify as a "distributor" in respect of the new regulations being introduced by the United Kingdom Inland Revenue, in which case UK investors will normally have their gains on disposal arising from their own currency transactions taxed as capital gains. Their income will be taxed as such.

**CURRENCY ADVICE AND MANAGEMENT**  
Arrangements can be made for the provision of a discretionary currency selection service based on investment in the Company's Shares for investors with a minimum of £10,000. Further information can be obtained from the Manager.

**SAVINGS PLAN**  
A Savings Plan will be operated for investors who would like to make regular investments in the Company.

**REDEMPTION OF SHARES**  
Shares of each class may be redeemed on any Dealing Day by giving not less than seven days' notice by fax or in writing specifying the number and class of Shares to be redeemed and giving payment instructions for the redemption proceeds. Notice received on any day which is not a business day in Guernsey, will be deemed to have been received on the next business day. Payment of the redemption proceeds may be made in any of the currencies (except Japanese Yen) listed below, either by transfer to the Shareholder's bank account or by cheque posted to the Shareholder at his registered address. The Share Certificate (with the redemption request on the reverse duly completed) must be received by the Company in Guernsey by the Dealing Day prior to the relevant Dealing Day.

The price at which Shares are redeemed will be the price calculated for the Dealing Day except as detailed in the fifth paragraph of section 1 of General Information set out below. Payment instructions for the redemption proceeds as to be paid on the Settlement Day will be given by the Company to its bankers in Guernsey or the appropriate stock exchange will be posted to the Shareholder at his risk. If the Share Certificate is not received before the intended Dealing Day, the Shares will not be redeemed until it is so received in which event the redemption price will be the price ruling for the first Dealing Day after it has been received and settlement will take place accordingly.

All Shares of each class not previously redeemed will be redeemed by the Company on 31st December, 1984 or, if that is not a Dealing Day, on the next following Dealing Day, at the respective redemption prices on each day for settlement on the relative Settlement Day.

**CONVERSION BETWEEN CLASSES OF SHARES**

Shareholders may convert all or part of their holdings of any one class of Shares into Shares of another class or classes by giving notice of their requirements on any Dealing Day. The Company will endeavour to make the necessary arrangements for the foreign exchange transaction in respect of a conversion as soon as practicable after receipt of the notice. The conversion of one class of Shares into another will actually take place on a subsequent Dealing Day. The old Share Certificate should also be returned to the Company with the conversion request on the reverse duly completed.

Conversion will take place at a rate calculated by reference to the values of the Shares of the classes concerned in accordance with the formula set out below. No charges will be levied by the Company on the conversion.

The new Share Certificate will not be posted to the Shareholder until the old Share Certificate, with the conversion request duly completed, has been received by the Company, but the conversion will not be delayed as a result.

The right to convert is dependent on the Company having sufficient available share capital to implement the conversion. The Manager will endeavour to ensure that the available capital is at a level where this will normally be possible.

Further information is contained in section 2 of General Information set out below.

**CERTIFICATES**  
Certificates representing the Shares issued will normally be despatched within two weeks of the appropriate Settlement Day at the risk of the persons entitled thereto.

**CUSTODIAN SERVICES**  
Arrangements have been made for N.M. Rothschild & Sons (C.I.) Limited to act as Custodian for investors who find the delivery of Share Certificates to and from Guernsey inconvenient. Shares can be registered in the name of Old Court Limited (N.M. Rothschild & Sons (C.I.) Limited's nominee company) and held by that Company for the account of the beneficial owner. The fees for this service are £25 per customer per annum plus £5 for each application for redemption and £10 for each conversion. Investors who are interested in this service should tick the appropriate box on the Application Form.

**SAVINGS PLAN**  
A Savings Plan will be available to provide a convenient method of making regular investments in the Company by banker's standing order. Investors will be able to choose the frequency of investment subject to a minimum of £500 (or its foreign currency equivalent) per payment. Investors who are interested in this service should tick the appropriate box on the Application Form.

**PUBLICATION OF PRICES**  
Prices of Shares of each class will be published daily in the Financial Times and will also be available from the Manager. The prices published will be those applicable to the currency in which the Shares are designated.

**FOREIGN EXCHANGE TRANSACTIONS**  
Where payments in respect of allotments or redemptions of Shares are to be tendered in a currency other than that in which the Shares concerned are designated, the necessary foreign exchange transactions will be arranged by the Company, normally with N. M. Rothschild & Sons (C.I.) Limited, on behalf of and for the account of the Applicant or Shareholder without responsibility as respects the Company.

**COMMISSIONS**  
The Manager may in its discretion pay commission to investors' agents, without recourse to the Company. Such commissions will be calculated at 1 per cent. per month of the month-end value of the Shares subscribed through the agent in question. Commission will be paid in one of the currencies listed below chosen by the agent concerned.

**TAXATION - (a) THE COMPANY**  
The Company is registered in the Cayman Islands and has applied for, and can be expected to obtain, an undertaking from the Cayman Islands authorities that, for a period of twenty years, no law which is enacted in the Cayman Islands imposing any tax to be levied on profits, income, gains or appreciations shall apply to the Company.

Registration and stamp duty fees in the Cayman Islands on the registration of the Company amounted to the equivalent of U.S.\$1,075. The annual filing fee payable each year by the Company in the Cayman Islands is currently the equivalent of U.S.\$579.

It is the intention of the Directors that the control and management of the Company will be exercised, so far as practicable, in such a way that it will not be resident in the United Kingdom. In any event it is expected that the Company would not be deemed to be a close company if it were so resident.

It is not expected that the Company will incur any tax or be liable to pay any statutory fees in Guernsey other than a nominal amount.

Having regard to the manner in which it conducts its operations, the Directors consider that the Company should not, in normal circumstances, incur any taxes in the countries in whose currencies the different classes of Shares are designated.

**TAXATION - (b) SHAREHOLDERS**  
Shareholders will not be subject to any tax in the Cayman Islands or Guernsey in respect of any Shares owned by them.

Cleanance has been obtained from the Board of Inland Revenue of the United Kingdom ("the Revenue") under Section 464 of the Income and Corporation Taxes Act 1970 that the provisions of Section 460 of that Act (cancellation of tax advantages from certain transactions in securities) will not apply.

For United Kingdom tax purposes it is expected that the Company will fall within the definition of an "offshore and overseas fund" for the purposes of certain legislation proposed to be enacted in 1984. If the Company does not distribute its income in full, this would cause United Kingdom taxpayers to suffer tax on gains arising upon disposal at the rates applicable to income. Since the Company proposes to distribute its income in full and to comply with the other requirements in order to obtain "distributor" status under the proposed legislation, the Directors expect that gains arising on disposals of Shares will continue to be subject to tax under the capital gains tax regime. Details of the proposed method of operation of the Company have been submitted to the Revenue. On the information supplied, including the assurance that all income of the Company will be properly distributed, and subject to the legislation being enacted in the form presently envisaged the Revenue confirmed on 15th March, 1984 that they saw no reason in principle why the Company should have difficulty in obtaining "distributor" status.

The Revenue has also stated that, each time a Shareholder redeems or converts his holding from one class of Shares to another, the element in the value of his holding on the redemption or conversion which represents monies accrued since the last distribution date (or since acquisition, if later) will be taxed as income.







OVER-THE-COUNTER

Stock	Sales (Miles)	High	Low	Last	Chng	Stock	Sales (Miles)	High	Low	Last	Chng
Continued from Page 28											
Montg	409	54	54	54	+1/2	Pharm	101	25	25	25	+1/2
Norfolk	409	124	144	144	+1/2	Pharm s	341	154	154	154	+1/2
Monsey	409	43	43	43	+1/2	Pharm s	126	27	27	27	+1/2
Montg	409	20	20	20	+1/2	Pharm s	22	22	22	22	+1/2
Montg	409	24	24	24	+1/2	Pharm s	22	22	22	22	+1/2
N-H											
NCA Co	79	10	10	10	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	38	38	38	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	69	69	69	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	301	301	301	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	11	11	11	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	272	272	272	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	243	243	243	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	112	112	112	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	85	85	85	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	226	226	226	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	148	148	148	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	68	68	68	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	168	168	168	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	200	200	200	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	17	17	17	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	76	76	76	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	252	252	252	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	40	40	40	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	76	76	76	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	238	238	238	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	4	4	4	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	136	136	136	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	150	150	150	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	49	49	49	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	84	84	84	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	238	238	238	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	148	148	148	+1/2	Pharm s	24	24	24	24	+1/2
NCA Co	79	32	32	32	+1/2	Pharm s	24	24	24	24	+1/2
O-O											
OOO Te	71	10	10	10	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	37	37	37	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	4	4	4	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	14	14	14	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	28	28	28	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	288	288	288	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	3	3	3	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	59	59	59	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	117	117	117	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	198	198	198	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	278	278	278	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	117	117	117	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	20	20	20	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	256	256	256	+1/2	Pharm s	24	24	24	24	+1/2
OOO Te	71	38	38	38	+1/2	Pharm s	24	24	24	24	+1/2
P-O											
PNC	212	474	474	474	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	89	89	89	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	72	72	72	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	20	20	20	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	10	10	10	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	6	6	6	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	42	42	42	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	62	62	62	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	24	24	24	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	885	885	885	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	372	372	372	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	217	217	217	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	234	234	234	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	143	143	143	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	1172	1172	1172	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	129	129	129	+1/2	Pharm s	24	24	24	24	+1/2
PNC	212	96	96	96	+1/2	Pharm s	24	24	24	24	+1/2
S-S											
SCI Sy s	87	16	16	16	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	58	58	58	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	229	229	229	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	260	260	260	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	428	428	428	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	793	793	793	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	54	54	54	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	8	8	8	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	15	15	15	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	108	108	108	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	43	43	43	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	39	39	39	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	18	18	18	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	270	270	270	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	18	18	18	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	319	319	319	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	21	21	21	+1/2	Pharm s	24	24	24	24	+1/2
SCI Sy s	87	80	80	80	+1/2	Pharm s	24	24	24	24	+1/2

## The Hongkong & Kowloon Wharf & Godown Company, Limited

Announcement to shareholders

### 1983 GROUP RESULTS

The Board has decided that the financial year end of the Company be changed from 31st December to 31st March 1984 to be co-terminous with that of World International (Holdings) Limited of which this Company is a 45 percent owned associate. Due to such a change, the results of the Company for the fifteen-month period from 1st January, 1983 to 31st March, 1984 are expected to be released in July 1984 and the Annual General Meeting of the Company is now scheduled to be held in September 1984.

**Profit**  
The unaudited total profit of the Group for the twelve months ended 31st December, 1983 increased by 23.3 percent from HK\$541.3 million for the corresponding period last year to HK\$667.6 million. Group profit attributable to shareholders, after taxation but before extraordinary items, amounted to HK\$425.4 million for the twelve months ended 31st December, 1983, compared to HK\$382.0 million in 1982, an increase of 11.4 percent. Earnings per share improved by 10.1 percent from 24.8 cents to 27.3 cents. In addition, extraordinary items totalling HK\$242.2 million (HK\$159.3 million in 1982) contributed to the profits arising from the sale of the Group's share in the West Point joint venture and from the sale of part of our interest in Hotel Marco Polo Limited, Singapore.

**Second Interim Dividend**  
A first interim dividend of 4.9 cents per share was paid in November 1983. With the change of the Company's financial year end date to 31st March, the Board has now declared a second interim dividend of 13.0 cents in respect of the fifteen-month period ended 31st March, 1984, payable on 20th June, 1984 to shareholders on record as at 8th June, 1984. The Register of Members will be closed from 5th June, 1984 to 8th June, 1984, both days inclusive. In order to qualify for the second interim dividend all transfers, accompanied by the relevant share certificates, must be lodged with the Company's Registrars, Central Registration Hong Kong Limited, not later than 4.00 p.m. on 1st June, 1984. A final dividend will be proposed when the Audited Accounts for the fifteen-month period ended 31st March, 1984 are available in July 1984.

**Highlights of Group's activities**  
● Harbour City Phase IV was completed on schedule and at present over 72 percent of this phase is let. The Group's other commercial/residential properties remained at over 96 percent let throughout the year. The Group's billion dollar Harbour City Complex has been completed without additional borrowings. The Group enjoys a very strong financial position with net deposits and bank balances of HK\$275 million at 31st December, 1983.

● The downturn in the Hong Kong hotel industry in the second half of 1982, continued into the first half of 1983, however, a rapid rebound in the latter part of 1983 resulted in the profit of Harbour Centre Development Limited, the Company's hotel subsidiary, for the twelve-month period ended 31st December, 1983 being only slightly lower than in 1982. However, the results of Hotel Marco Polo Limited, Singapore were adversely affected by an oversupply situation in the Singapore hotel industry.

● The Company's warehouse and cargo handling activities were affected by an oversupply of warehouse space in Hong Kong which made marketing conditions very difficult, however, occupancy in our 2.6 million square feet of lettable area has remained at high levels.

● HongKong Tramways and Star Ferry both suffered a decline in passengers, but the fare revision enabled Star Ferry to produce increased returns while HongKong Tramways produced increased returns as a result of reductions in expenditure.

Summary of Results	Twelve months to 31st December 1983	Twelve months to 31st December 1982
Group profit before taxation	513.8	491.5
Taxation	48.6	61.3
Group profit after taxation	465.2	430.2
Minority interests	39.8	48.2
Group profit before extraordinary items	425.4	382.0
Extraordinary items	242.2	159.3
Group profit after extraordinary items	667.6	541.3
Earnings per share, before extraordinary items	27.3 cents	24.8 cents
Dividends per share	17.9 cents	16.0 cents

Hong Kong, 11th April, 1984. By order of the Board, World-Wide Secretaries Limited.

US\$200,000,000 Guaranteed Floating Rate Notes  
Repayable at the Option of the Holder at Par  
Commencing October 1982

## Citicorp Overseas Finance Corporation N.V.

(Incorporated with limited liability in the Netherlands Antilles)

Unconditionally Guaranteed by  
**CITICORP**

Notice is hereby given that the Rate of Interest has been fixed at 10 1/2% pa and that the interest payable on the relevant Interest Payment Date, July 13, 1984, against Coupon No. 17 in respect of US\$10,000 nominal of the Notes will be US\$271.74.

April 12, 1984, London  
By: Citibank, N.A. (CSI Dept), Agent Bank **CITIBANK**

All of these securities having been sold, this announcement appears as a matter of record only:

# \$400,000,000

## The Chase Manhattan Corporation

### Floating Rate Subordinated Notes Due 1996

Interest on the Notes is payable quarterly on Interest Payment Dates in February, May, August and November of each year commencing August 3, 1984. Interest on the Notes for each quarterly period will be 1/4 of 1% per annum plus the arithmetic mean of London interbank offered quotations for three-month Euro-dollar deposits prevailing two New York Business Days before the beginning of each Interest Period (subject to a minimum rate of 8 1/4% per annum). Interest payable on the Notes on each Interest Payment Date will be payable in shares of Common Stock of the Company to the extent that such interest is payable at the rate of 8 1/4% per annum. If interest is payable at a rate in excess of 8 1/4% per annum, such excess will be payable in cash. Unless a holder elects otherwise, shares paid as interest are to be automatically sold so that the holders will receive the full amount of their interest in cash.

**Lehman Brothers Kuhn Loeb**  
*Incorporated*

**Goldman, Sachs & Co.**

**Merrill Lynch Capital Markets**

**Salomon Brothers Inc**

**The First Boston Corporation**

**A. G. Becker Paribas**  
*Incorporated*

**Kidder, Peabody & Co.**  
*Incorporated*

**M. A. Schapiro & Co., Inc.**

**Alex. Brown & Sons**  
*Incorporated*

**Moseley, Hallgarten, Estabrook & Weeden Inc.**

**Thomson McKinnon Securities Inc.**

**Blyth Eastman Paine Webber**  
*Incorporated*

**Prudential-Bache**  
*Securities*

**Shearson/American Express Inc.**

**Craigie Incorporated**

**Oppenheimer & Co., Inc.**

**Smith Barney, Harris Upham & Co.**  
*Incorporated*

**E. F. Hutton & Company Inc.**

**L. F. Rothschild, Unterberg, Towbin**

**Dean Witter Reynolds Inc.**

**McDonald & Company**  
*Securities, Inc.*

**Prescott, Ball & Turben, Inc.**

**Tucker, Anthony & R. L. Day, Inc.**

Chase Manhattan Capital Markets Corporation  
initiated this transaction and  
acted as financial advisor to the issuer.

April, 1984

## Anglo American Investment Trust Limited

(Incorporated in the Republic of South Africa)

### Preliminary Profit Announcement and Balance Sheet and Notice of Final Dividend on the Ordinary Shares

Subject to final audit, the income statement for the year ended March 31 1984 and the balance sheet at that date, are as follows:

Income Statement	Company and associated company	
------------------	--------------------------------	--





# London and Manchester Group plc

Extracts from the statement by the Chairman, Mr H. I. K. Browne, F.C.A., on the Group Report and Accounts for 1983

1983 was a year of significant progress for the Group. New business increased at a rate greater than that experienced for some years and plans for the development of the Group's structure and the rationalisation of the senior executive functions were implemented. I am therefore able to sound a note of optimism for the future in spite of Budget changes to which I refer later in my statement, although it has to be recognised that the Group's recent achievements could be largely negated if there were a return to the high rates of inflation and financial instability which have marked much of the last decade.

On behalf of your Board I would like to express appreciation of the hard work and dedication of management and staff which has so effectively contributed to the Group's recent progress.

**Board**  
In July 1983 I was very pleased to welcome Mr. Hugh Jenkins and Mr. Jeremy Leigh Pemberton as non-executive directors. With their appointment I feel that the Group has gained invaluable experience. Mr. Jenkins being the senior investment executive of one of the country's leading pension funds and Mr. Leigh Pemberton having an outstanding record in a high quality manufacturing company of international status.

**Profit and Loss Account and Dividend**  
Income has been received by transfers of £3,268,000 from the life funds of London and Manchester Assurance and £950,000 from the investment trust retirement annuity fund. In addition investment income increased from £1,056,000 to £1,157,000.

**The Insurance Market**  
An important feature in the insurance market in 1983 was the introduction of a new system for tax relief on mortgage interest (MIRAS) which enhanced the attraction of life policies as a means of repayment. The new business figures for the industry as a whole benefited from this change and I am pleased to say that performance of both the home savings and life broker divisions in this respect compares well with that of the Group's competitors.

**Home Service Division**  
The home service division remains the major profit centre within the Group. The industrial branch sector has made progress both in the growth of new business and in the control of the quality of that business. The result has been an overall increase in premium income well in excess of the current rate of inflation. The ordinary branch experienced a quite outstanding year, largely as a result of MIRAS.

**Life Broker Division**  
Both annual and single premium business showed strong growth in 1983 in this relatively new division. Linked annual premium business was 119 per cent in excess of 1982 levels, whilst with the benefit of MIRAS conventional business increased by 152 per cent over the comparative figure. Single premium policies continued to attract attention, new business being more than twice that of the previous year.

**Pensions Division**  
The results of this division also comfortably exceeded those of 1982. In the important area of group pensions, new business moved against market trends with annual premiums 58 per cent higher than the preceding year end single premiums up by 36 per cent. The Combina Plan, a unique group pension plan designed to offer the benefits of a final salary scheme with the early leaver advantages of money purchase, and Transplan, another major product innovation for the job mover, both performed well.

**General Branch**  
An attractive new motor policy and more flexible means of premium payment were introduced during the year. Gross premium income rose by 10 per cent, but claims, with a marked increase in the provision for theft, continued to reflect the generally poor experience of the industry as a whole.

**Investments**  
Throughout the world there have been signs that the long-awaited economic recovery has at last started. As so often before, this move has been led by the United States where the strength of the upturn during the first half of 1983 surprised most economic commentators. Because of the improved business prospects stock markets everywhere were buoyant.

**Share Capital and Borrowing Powers**  
The person savings market is becoming ever more competitive and the possibility of the Group pursuing opportunities for expansion into other savings-related activities has been given added significance by the abolition of life assurance premium relief (LAPR). For this reason, and in order to give the Board more flexibility in managing the Group's affairs, shareholders are to be asked to approve an increase in the authorised share capital and the borrowing powers of the Board.

**The Future**  
The Budget on 13 March withdrew LAPR from new business as from that date. This decision by the Chancellor has removed one of the incentives from saving through a life assurance policy and the effect will be to reduce the potential of some of the current range of products offered by companies in this market.

Your Board believes that in taking a positive attitude towards this change through the design of new products and in particular in emphasising a life assurance company's unique role in the savings industry it will still be possible to attract a considerable volume of business to the Group. The pensions and general branch marketing will be unaffected and indeed could be enhanced. Your Group's prosperity and performance will continue to be based on well designed products and an effective investment policy, backed by efficient administration and direction, to give a good service and financial return to policyholders and will not be materially affected by these changes.

The life broker and pensions divisions continue to meet their planned business objectives and provided that business is maintained shareholders will soon see satisfactory profit figures emerging as a result of their achievements. The inherent growth of premium income and the long term prospects in the home service division will benefit both from the economic recovery and the LAPR advantage that existing life business will retain.

The Group has a number of divisions which can work within clearly defined plans towards profit-centred business objectives and the structure now fits the overall corporate plan to which your Board has been working, with particular reference to the diversification introduced during the last three years. Opportunities for profitable expansion and diversification will be taken, providing these can be achieved on acceptable terms. Meanwhile it is clear that there is no lack of business to be written and that, providing the lower levels of inflation can be maintained, this can be secured at an increasingly acceptable cost. The prospects for financial services in this country are good and your Group will continue to take full advantage of any opportunity which may arise.

The Annual General Meeting will be held on 4 May 1984. Copies of the Report, which includes the full text of the Chairman's Statement may be obtained from the Joint Secretary at Imperial House, Dominion Street, London EC2M 2SP.

were not ignored and £12.1m was invested in gilts and other fixed interest securities to take advantage of the high rates of real return available. New property purchases were again concentrated in the retail sector and allowing for sales of some properties no longer appropriate for the portfolio, a further £8.5m was invested during the year.

1983 was a busy year for corporate activity amongst investment trusts; Broadstone, Dominion & General and Scottish Ontario were unlisted, several mergers took place, while British Industries & General and Moorside were taken over by companies outside the sector. As shareholders in many of these trusts, Group companies benefited from the changes, and in a number of cases played an active role in initiating or supporting the moves in the interests of policyholders. Nevertheless, holdings in investment trusts totalling £177m still represent a large part of several portfolios within the Group. The maintenance of a thriving investment trust sector is therefore of the utmost importance and I welcome the steps taken by some management groups to improve their public image as well as their investment performance. Such initiatives can only result in greater support for the sector from all types of investor.

Linked life assurance performed very strongly during 1983 with the total funds increasing by £33.5m to £112.6m. It was particularly pleasing to note that the Investment Trust Fund (holding £60.8m of policyholders' money) was the Group's best performing fund with an increase in unit price of 37.3 per cent during the year, compared with a rise of 34.7 per cent in the FT Actuaries' Investment Trust Index.

Mortgage lending is now undertaken on a variable rate basis, financed by external borrowing. This activity is being transacted through an associated company, London and Manchester (Mortgages) Limited, in which the Group has a 50 per cent interest. The new scheme has proved very successful with advances exceeding £2.5m including approximately £.5m switched from existing fixed rate loans.

**Bonuses**  
In the ordinary branch a reversionary bonus of £5.75 per cent of the sum assured has been declared compared with £5.50 per cent in the previous year. Industrial branch reversionary bonuses have also been improved.

The rise in market values of assets over the year has resulted in substantially higher dividend bonuses and this is reflected in increased transfers from investments realisation reserves, £4.0m to the ordinary life fund and £3.1m to the industrial life fund, totalling £7.1m, compared with £4.3m in the previous year.

**Group Structure**  
Following the formation in 1981 of London and Manchester Group plc as the Group's holding company, your Board has been giving attention to the development of an appropriate structure for the Group's activities. As part of this exercise an authorised insurance company, London and Manchester (Managed Funds) Limited, and a unit trust management company, London and Manchester (Trust Management) Limited, commenced business during 1983 as subsidiaries of the holding company. In addition, Welfare Insurance Company Limited, previously owned by London and Manchester Assurance, was transferred to the holding company with effect from 31 December 1983. It is the opinion of your Board that this restructuring is in the interests of both policyholders and shareholders and will significantly assist the development of the Group in the years to come.

**Share Capital and Borrowing Powers**  
The person savings market is becoming ever more competitive and the possibility of the Group pursuing opportunities for expansion into other savings-related activities has been given added significance by the abolition of life assurance premium relief (LAPR). For this reason, and in order to give the Board more flexibility in managing the Group's affairs, shareholders are to be asked to approve an increase in the authorised share capital and the borrowing powers of the Board.

**The Future**  
The Budget on 13 March withdrew LAPR from new business as from that date. This decision by the Chancellor has removed one of the incentives from saving through a life assurance policy and the effect will be to reduce the potential of some of the current range of products offered by companies in this market.

Your Board believes that in taking a positive attitude towards this change through the design of new products and in particular in emphasising a life assurance company's unique role in the savings industry it will still be possible to attract a considerable volume of business to the Group. The pensions and general branch marketing will be unaffected and indeed could be enhanced. Your Group's prosperity and performance will continue to be based on well designed products and an effective investment policy, backed by efficient administration and direction, to give a good service and financial return to policyholders and will not be materially affected by these changes.

The life broker and pensions divisions continue to meet their planned business objectives and provided that business is maintained shareholders will soon see satisfactory profit figures emerging as a result of their achievements. The inherent growth of premium income and the long term prospects in the home service division will benefit both from the economic recovery and the LAPR advantage that existing life business will retain.

The Group has a number of divisions which can work within clearly defined plans towards profit-centred business objectives and the structure now fits the overall corporate plan to which your Board has been working, with particular reference to the diversification introduced during the last three years. Opportunities for profitable expansion and diversification will be taken, providing these can be achieved on acceptable terms. Meanwhile it is clear that there is no lack of business to be written and that, providing the lower levels of inflation can be maintained, this can be secured at an increasingly acceptable cost. The prospects for financial services in this country are good and your Group will continue to take full advantage of any opportunity which may arise.

## International Standard Electric Corporation

6% Sinking Fund Debentures Due 1987

NOTICE IS HEREBY GIVEN that, pursuant to the provisions of the Indenture dated as of May 15, 1967, under which the above described Debentures were issued, \$1,834,000 principal amount of the said Debentures of the following distinctive numbers has been drawn by lot for redemption on May 15, 1984 (the "sinking fund redemption date") through the operation of the Mandatory Sinking Fund provisions at 100% of the principal amount thereof (the "redemption price"), together with accrued interest to the redemption date:

41,696 COUPON DEBENTURES BEARING THE PREFIX LETTER M

58 1843 2413 8900 6347	6975 10622 14346 16756 19106	22051 26660 28761 28732 30349 32192
18 1848 2420 8909 6348	6976 10623 14347 16757 19107	22052 26661 28762 28733 30350 32193
38 1874 2430 8907 6350	6994 10660 14384 16795 19146	22056 26704 28806 28737 30354 32197
08 1901 2431 8920 6358	6906 10733 14468 16783 19201	22109 26761 28854 28742 30419 32255
18 1902 2432 8925 6384	6908 10904 14489 16815 19221	22110 26834 28929 28800 30426 32289
21 1910 2478 8949 6385	6929 10928 14674 16848 19287	22111 26856 29087 28813 30480 32350
22 1915 2484 8974 6386	6931 10930 14678 16844 19317	22112 26854 29088 28816 30489 32358
23 1945 2490 4003 6399	6937 10931 14469 16816 19222	22113 26834 28929 28800 30426 32289
27 1949 2434 4081 6400	6948 10922 14490 16848 19288	22205 26836 29107 28810 30482 32352
28 1968 2902 4055 6402	6953 10928 14506 16857 19288	22405 26915 29120 28824 30561 32424
29 1987 2919 4056 6410	6974 10940 14832 16896 19344	22407 26917 29122 28826 30563 32426
29 1973 2927 4100 6411	6970 10934 14536 16908 19368	22417 26931 29140 28829 30563 32426
29 1989 2936 4102 6421	6972 10970 14840 16910 19374	22421 26923 29139 28830 30563 32426
29 2005 2939 4105 6422	6976 11070 14848 16914 19376	22423 26925 29141 28832 30565 32428
30 1989 2940 4106 6422	6979 11080 14611 16923 19394	22425 26927 29143 28834 30567 32430
30 2003 2924 4108 6424	6970 11109 14612 16942 19397	22430 26928 29145 28834 30567 32430
30 2004 2923 4110 6426	6974 11117 14620 16946 19399	22431 26929 29146 28835 30568 32431
48 2007 2928 4122 6432	6976 11115 14684 16951 19403	22434 26931 29148 28836 30569 32432
53 2006 2927 4128 6433	6978 11013 14686 16953 19411	22435 26932 29149 28837 30570 32433
53 2018 2922 4125 6431	6970 11014 14688 16951 19408	22436 26933 29150 28838 30571 32434
53 2019 2923 4126 6432	6974 11016 14689 16953 19410	22437 26934 29151 28839 30572 32435
57 2015 2916 4128 6431	6967 11017 14687 16952 19409	22438 26935 29152 28840 30573 32436
57 2016 2917 4129 6432	6968 11018 14688 16953 19410	22439 26936 29153 28841 30574 32437
59 2019 2920 4132 6435	6970 11019 14689 16954 19411	22440 26937 29154 28842 30575 32438
59 2020 2921 4133 6436	6971 11020 14690 16955 19412	22441 26938 29155 28843 30576 32439
59 2021 2922 4134 6437	6972 11021 14691 16956 19413	22442 26939 29156 28844 30577 32440
59 2022 2923 4135 6438	6973 11022 14692 16957 19414	22443 26940 29157 28845 30578 32441
59 2023 2924 4136 6439	6974 11023 14693 16958 19415	22444 26941 29158 28846 30579 32442
59 2024 2925 4137 6440	6975 11024 14694 16959 19416	22445 26942 29159 28847 30580 32443
59 2025 2926 4138 6441	6976 11025 14695 16960 19417	22446 26943 29160 28848 30581 32444
59 2026 2927 4139 6442	6977 11026 14696 16961 19418	22447 26944 29161 28849 30582 32445
59 2027 2928 4140 6443	6978 11027 14697 16962 19419	22448 26945 29162 28850 30583 32446
59 2028 2929 4141 6444	6979 11028 14698 16963 19420	22449 26946 29163 28851 30584 32447
59 2029 2930 4142 6445	6980 11029 14699 16964 19421	22450 26947 29164 28852 30585 32448
59 2030 2931 4143 6446	6981 11030 14700 16965 19422	22451 26948 29165 28853 30586 32449
59 2031 2932 4144 6447	6982 11031 14701 16966 19423	22452 26949 29166 28854 30587 32450
59 2032 2933 4145 6448	6983 11032 14702 16967 19424	22453 26950 29167 28855 30588 32451
59 2033 2934 4146 6449	6984 11033 14703 16968 19425	22454 26951 29168 28856 30589 32452
59 2034 2935 4147 6450	6985 11034 14704 16969 19426	22455 26952 29169 28857 30590 32453
59 2035 2936 4148 6451	6986 11035 14705 16970 19427	22456 26953 29170 28858 30591 32454
59 2036 2937 4149 6452	6987 11036 14706 16971 19428	22457 26954 29171 28859 30592 32455
59 2037 2938 4150 6453	6988 11037 14707 16972 19429	22458 26955 29172 28860 30593 32456
59 2038 2939 4151 6454	6989 11038 14708 16973 19430	22459 26956 29173 28861 30594 32457
59 2039 2940 4152 6455	6990 11039 14709 16974 19431	22460 26957 29174 28862 30595 32458
59 2040 2941 4153 6456	6991 11040 14710 16975 19432	22461 26958 29175 28863 30596 32459
59 2041 2942 4154 6457	6992 11041 14711 16976 19433	22462 26959 29176 28864 30597 32460
59 2042 2943 4155 6458	6993 11042 14712 16977 19434	22463 26960 29177 28865 30598 32461
59 2043 2944 4156 6459	6994 11043 14713 16978 19435	22464 26961 29178 28866 30599 32462
59 2044 2945 4157 6460	6995 11044 14714 16979 19436	22465 26962 29179 28867 30600 32463
59 2045 2946 4158 6461	6996 11045 14715 16980 19437	22466 26963 29180 28868 30601 32464
59 2046 2947 4159 6462	6997 11046 14716 16981 19438	22467 26964 29181 28869 30602 32465
59 2047 2948 4160 6463	6998 11047 14717 16982 19439	22468 26965 29182 28870 30603 32466
59 2048 2949 4161 6464	6999 11048 14718 16983 19440	22469 26966 29183 28871 30604 32467
59 2049 2950 4162 6465	7000 11049 14719 16984 19441	22470 26967 29184 28872 30605 32468
59 2050 2951 4163 6466	7001 11050 14720 16985 19442	22471 26968 29185 28873 30606 32469
59 2051 2952 4164 6467	7002 11051 14721 16986 19443	22472 26969 29186 28874 30607 32470
59 2052 2953 4165 6468	7003 11052 14722 16987 19444	22473 26970 29187 28875 30608 32471
59 2053 2954 4166 6469	7004 11053 14723 16988 19445	22474 26971 29188 28876 30609 32472
59 2054 2955 4167 6470	7005 11054 14724 16989 19446	22475 26972 29189 28877 30610 32473
59 2055 2956 4168 6471	7006 11055 14725 16990 19447	22476 26973 29190 28878 30611 32474
59 2056 2957 4169 6472	7007 11056 14726 16991 19448	22477 26974 29191 28879 30612 32475
59 2057 2958 4170 6473	7008 11057 14727 16992 19449	22478 26975 29192 28880 30613 32476
59 2058 2959 4171 6474	7009 11058 14728 16993 19450	22479 26976 29193 28881 30614 32477
59 2059 2960 4172 6475	7010 11059 14729 16994 19451	22480 26977 29194 28882 30615 32478
59 2060 2961 4173 6476	7011 11060 14730 16995 19452	22481 26978 29195 28883 30616 32479
59 2061 2962 4174 6477	7012 11061 14731 16996 19453	22482 26979 29196 28884 30617 32480
59 2062 2963 4175 6478	7013 11062 14732 16997 19454	22483 26980 29197 28885 30618 32481
59 2063 2964 4176 6479	7014 11063 14733 16998 19455	22484 26981 29198 28886 30619 32482
59 2064 2965 4177 6480	7015 11064 14734 16999 19456	22485 26982 29199 28887 30620 32483
59 2065 2966 4178 6481	7016 11065 14735 17000 19457	22486 26983 29200 28888 30621 32484
59 2066 2967 4179 6482	7017 11066 14736 17001 19458	22487 26984 29201 28889 30622 32485
59 2067 2968 4180 6483	7018 11067 14737 17002 19459	22488 26985 29202 28890 30623 32486
59 2068 2969 4181 6484	7019 11068 14738 17003 19460	22489 26986 29203 28891 30624 32487
59 2069 2970 4182 6485	7020 11069 14739 17004 19461	22490 26987 29204 28892 30625 32488
59 2070 2971 4183 6486	7021 11070 14740 17005 19462	22491 26988 29205 28893 30626 32489
59 2071 2972 4184 6487	7022 11071 14741 17006 19463	22492 26989 29206 28894 30627 32490
59 2072 2973 4185 6488	7023 11072 14742 17007 19464	22493 26990 29207 28895 30628 32491
59 2073 2974 4186 6489	7024 11073 14743 17008 19465	22494 26991 29208 28896 30629 32492
59 2074 2975 4187 6490	7025 11074 14744 17009 19466	22495 26992 29209 28897 30630 32493
59 2075 2976 4188 6491	7026 11075 14745 17010 19467	22496 26993 29210 28898 30631 32494



WORLD STOCK MARKETS

Indices

Table with columns for New York, Dow Jones, and various indices. Includes sub-sections for Standard and Poors and N.Y.S.E. All Common.

Table for Montreal stock market indices.

Table for Toronto stock market indices.

Table for New York Active Stocks, listing various stocks and their prices.

CONTRACTS

Bovis wins £13m prison conversion

Work is to start this summer on turning the Gyles Hill Borstal Institution at St Neots, Cambridgeshire into a category C prison for 500 prisoners.

Factory jobs for Mowlem

Factory building contracts mostly in the north-east worth £3.7m have been won by the Mowlem Group.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1.3m contract for the conversion of a building in Glasgow.

Advertisement for 'Jant' construction services, featuring a logo and text about quality construction and refurbishment.

Wallis has £12m batch

G. E. WALLIS & SONS has won several contracts, worth £12m, including construction of Earth Sciences Building at Egham for the Royal Holloway College.

Henry Boot Building

Henry Boot Building is to undertake the £3m refurbishment and upgrading of a detached seven-storey educational facility in Lodge Road, London.

Streeters of Godalming

Streeters of Godalming, a member of the Costain Group, has been awarded two sewerage contracts totalling £1.4m.

Wiltshire Scotland

Wiltshire Scotland has won contracts worth £1.6m for the rehabilitation work in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

Walter Lawrence Construction

Walter Lawrence Construction has been awarded a £1m design and build contract for the conversion of a building in Glasgow.

NOTICE To the holders of GFC INTERNATIONAL FINANCE N.V. 10 1/4% Guaranteed Debentures Due 1995

The Royal Bank of Scotland plc U.S.\$75,000,000 Floating Rate Capital Notes due 1986 to 1994

For the three month period 16th April, 1984 to 16th July, 1984, the Notes will bear an interest rate of 11 1/4% per annum.

Redemption Notice

City of Oslo (Norway)

9% Sinking Fund External Loan Bonds due May 1, 1985

NOTICE IS HEREBY GIVEN, pursuant to Fiscal Agency Agreement dated as of May 1, 1970 under which the above described Bonds were issued.

has selected by lot for redemption on May 1, 1984 through the operation of the Sinking Fund redemption price of 100% of the principal amount thereof.

The serial numbers of the Bonds selected by lot for redemption are as follows:

Large table listing bond serial numbers for redemption, organized in columns.

On May 1, 1984 there will be due and payable upon each Bond selected for redemption the said redemption price, together with interest accrued to the date fixed for redemption.

Payment of the redemption price of the Bonds to be redeemed will be made in such coin or currency of the United States of America as at the time of payment is legal tender for the payment of public and private debts thereon.

with all coupons appertaining thereto maturing after the date fixed for redemption, at the Corporate Trust Office of Citibank, N.A., Municipal Bond Processing Window, 80 Exchange Place, 16th Floor, New York, N.Y. 10043 and subject to applicable laws and regulations, at the main offices of Citibank, N.A. in Amsterdam, Brussels, London, Milan and Paris.

Payment at the offices of Citibank, N.A. in Amsterdam, Brussels, London, Milan and Paris. Payment at the offices of Citibank, N.A. in Europe referred to above will be made by check drawn upon a bank in New York City or by a transfer to a dollar account maintained by the payee with a bank in New York City.

On and after the date fixed for redemption interest on said Bonds will cease to accrue. Coupons due May 1, 1984 should be detached from the Bonds and presented for payment in the usual manner.

For the CITY OF OSLO (NORWAY) CITIBANK, N.A. as Fiscal Agent

April 2, 1984

OVER-THE-COUNTER

Continued from Page 31

Table listing over-the-counter stock prices for various companies.

CONTRACTS AND TENDERS

AVIS D'APPEL D'OFFRES INTERNATIONALES

REPUBLIQUE DU MALI ENERGIE DU MALI

ELECTRIFICATION DE BAMAKO, TRANCHE B5

L'Energie Du Mali (EDM) a obtenu un prêt de la Banque Mondiale pour financer l'électrification de plusieurs quartiers périphériques de Bamako et le renforcement du réseau MT.

2. ACHAT DU DOSSIER

Le dossier complet comprend 2 exemplaires de conditions générales, spécifications et tableaux de prix et 1 exemplaire des plans.

3. REMISE ET OUVREMENT DES OFFRES

Les offres doivent parvenir sous pli fermé à la Direction Générale de l'Energie Du Mali, Square Patrice Lumumba, Bamako, avant le 26 juin 1984 à 08.00 heures.

NORTHERN IRELAND GAS COMPANY

NATURAL GAS PROJECT PHASE I

Applications are invited from suitably qualified Civil and Mechanical Engineering Contractors who wish to be considered for inclusion on a select list of tenders for the construction of the above project.

The work comprises approximately 90 km of 450 mm dia. high pressure steel natural gas pipeline with associated installations including a pressure reduction station and 2 km of medium pressure pipeline.

The Conditions of Contract will be those of the I.C.E. Fifth Edition (June 1973) (Revised January 1975) with an award of contracts during the early part of March 1985 for completion by 30 August 1985.

Applications are to include details of similar works (range in value from £3m to £5m) undertaken during the previous 5 years stating value, location, type of work, the employing Authority and Engineer to whom reference may be made, together with the current Board and Management structure and C.V.'s of key personnel, copy of the latest audited accounts and Group/Company organisation and any joint Venture proposals.

An Application should be addressed to: The Managing Director, Northern Ireland Gas Company Ltd., R.A.C. House, 79 Chichester Street, Belfast BT1 4RR. for receipt not later than 30 April 1984.

PERSONAL

£500,000 Property lottery and £45,000 year income

We are instructed to offer by lottery a PRIVATE PROPERTY PORTFOLIO with a value in excess of £500,000.

You can win the frehold property complex with an income in excess of £45,000 per year for £190 per ticket.

For tickets please make cheques etc payable to: Dibb & Clegg, Solicitors.

31 Regent Street, Barnsley, South Yorkshire S70 2JH. Complete details including conditions will be sent by return.

COMPANY NOTICES

NOTICE OF RATE OF INTEREST CREDIT FONCIER DE FRANCE

Guaranteed Floating Rate Notes due 1988

In accordance with the provisions of the Interest Determination Agency Agreement between CREDIT FONCIER DE FRANCE and National Bank of Abu Dhabi, Paris 8, France, the rate of interest applicable to the Floating Rate Notes given that the rate of interest has been fixed at 11 1/4% per cent per annum, from 1st April 1984, to 30th April 1984, is 11 1/4% per cent per annum.

Coupon No. 6 will be US\$290.70 and that such amount has been computed on the actual number of days elapsed (183) divided by 360.

By: National Bank of Abu Dhabi Reference Agent

BANCO DI ROMA

NOTICE OF RATE OF INTEREST

Guaranteed Floating Rate Notes due 1988

In accordance with the provisions of the Interest Determination Agency Agreement between CREDIT FONCIER DE FRANCE and National Bank of Abu Dhabi, Paris 8, France, the rate of interest applicable to the Floating Rate Notes given that the rate of interest has been fixed at 11 1/4% per cent per annum, from 1st April 1984, to 30th April 1984, is 11 1/4% per cent per annum.

Coupon No. 6 will be US\$290.70 and that such amount has been computed on the actual number of days elapsed (183) divided by 360.

By: National Bank of Abu Dhabi Reference Agent

SCHLESINGER INTERNATIONAL FUND (LUXEMBOURG) S.A.

US\$75,000,000 Hydro Quebec 10% Debentures

Due 15th May 1999

Debentures covering US\$2,000,000 have been purchased on the market to satisfy the Purchase Fund due 15th May 1984

CONSTRUCTION OF NOTICE OF MEETING OF SHAREHOLDERS

In the General Meeting of the Company held on 15th May 1984, the following resolutions were passed:

1. That the Annual Report and Accounts of the Company for the year ended 31st December 1983 be approved and that the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

2. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

3. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

4. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

5. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

6. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

7. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

8. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

9. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

10. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

11. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

12. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

13. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

14. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

15. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

16. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

17. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

18. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

19. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.

20. That the sum of £1,000,000 be distributed as a dividend in cash to the shareholders of the Company as at 31st December 1983.



AUTHORISED UNIT TRUSTS

Table listing various unit trusts such as Abbey Unit Trst Mgrs, American Growth, and others, with columns for name, manager, and other details.

Table listing unit trusts under the heading 'B-H Shares Co of Unit Trusts Ltd (a) (s)', including names like B-H Growth Fund and B-H Income Fund.

Table listing unit trusts under the heading 'Crown Unit Trust Services Ltd', including names like Crown Growth Fund and Crown Income Fund.

Table listing unit trusts under the heading 'Equity & Law Unit Trst Mgrs (a) (s)', including names like Equity & Law Growth Fund and Equity & Law Income Fund.

Table listing unit trusts under the heading 'F & C Unit Management', including names like F & C Growth Fund and F & C Income Fund.

Table listing unit trusts under the heading 'Franklin Unit Trst Mgrs (a) (s)', including names like Franklin Growth Fund and Franklin Income Fund.

Table listing unit trusts under the heading 'Growth & Income Unit Trst Mgrs (a) (s)', including names like Growth & Income Growth Fund and Growth & Income Income Fund.

Table listing unit trusts under the heading 'H & S Unit Trst Mgrs (a) (s)', including names like H & S Growth Fund and H & S Income Fund.

Table listing unit trusts under the heading 'I & J Unit Trst Mgrs (a) (s)', including names like I & J Growth Fund and I & J Income Fund.

FT UNIT TRUST INFORMATION SERVICE

Main table for FT Unit Trust Information Service, listing various unit trusts with columns for name, manager, and performance data.

Table listing insurance companies and their policies, including Albion Life Assurance Co and others.

Table listing insurance companies and their policies, including British Overseas Life Assurance Co and others.

Table listing insurance companies and their policies, including Commercial Union Group and others.

Table listing insurance companies and their policies, including Crown Life Assurance Co and others.

Table listing insurance companies and their policies, including Equitable Life Assurance Co and others.

Table listing insurance companies and their policies, including Fidelity Assurance Co and others.

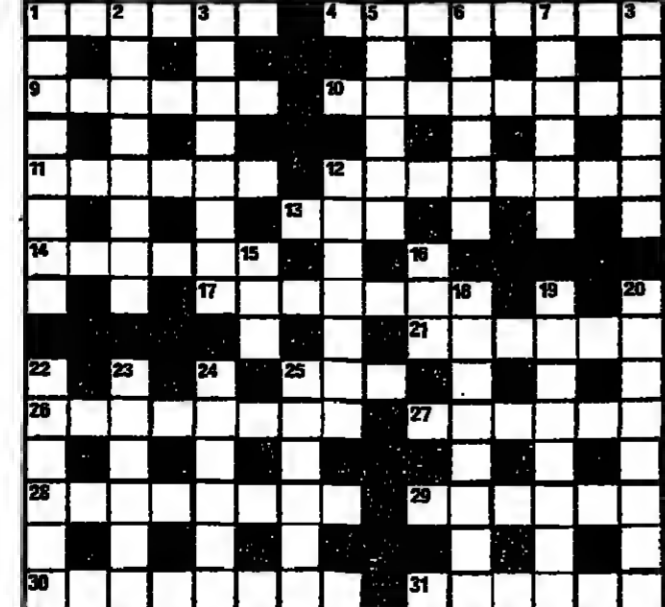
Table listing insurance companies and their policies, including General Accident Assurance Co and others.

Table listing insurance companies and their policies, including Guardian Life Assurance Co and others.

Table listing insurance companies and their policies, including Industrial Assurance Co and others.

F.T. CROSSWORD PUZZLE No. 5,394

- ACROSS
1 Hide or show (6)
4 Possible secret of not having to pay (4, 4)
9 More suitable for one on the assembly line (6)
10 Self-expressive types (8)
11 Bag a wild cat (6)
13 Some games of tennis get harder (3)
14 Elaborate plot to make a speech about (6)
17 Game lay around for use by the cook (7)
21 I'm more upset by a personal account (6)
25 Quietly led this animal will get by (3)
26 Traffic force includes thousands (8)
27 Treatment for bruises in a car smash (8)
28 List includes advert for a vehicle (8)
29 The spirit an artist comes in with (6)
30 Calm sentry that is becoming agitated (8)
31 Seem a very quiet listener (6)
DOWN
1 Kindly feeling not hard to place (4, 4)
2 Newly arrived, it is up inside and reserved (8)
3 They can get hot weather (8)



- 5 A small pen, perhaps (6)
6 Bird gets a morsel—a choice one (6)
7 Possibly secure and free from danger (6)
8 A tree's transformed in springtime (6)
12 He doesn't want others to bother him about tortois (7)
15 Part of a week-end supplement (3)
16 Margaret shortly turned to stone (3)
18 Predator moved to show a sign of distress (4, 4)
19 I'm set up in an easily managed residence (8)
20 Break one's nose, perhaps (8)
22 Wags points for musical arrangements (6)
23 With a look the little devil may injure one (6)
24 Argue about an issue (6)
25 Stress it's money on account (8)

Table listing various financial services and companies, including Antidote Investment Fund SA and others.

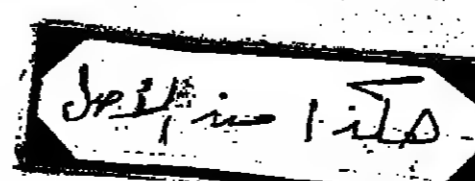
Table listing various financial services and companies, including British Overseas Life Assurance Co and others.

Table listing various financial services and companies, including Commercial Union Group and others.

Table listing various financial services and companies, including Crown Life Assurance Co and others.

Table listing various financial services and companies, including Equitable Life Assurance Co and others.

Table listing various financial services and companies, including Fidelity Assurance Co and others.





Handwritten Arabic text: "مركز الاستثمار"

INSURANCE & OVERSEAS MANAGED FUNDS

Table of financial data for various insurance and managed funds, including Barclays Life Ass., C.T. Management Ltd., and others.

Table of financial data for various insurance and managed funds, including Lloyds Life Assurance, Property Growth Assur. Co. Ltd., and others.

Table of financial data for various insurance and managed funds, including Standard Life Assurance Company, Bank of America International S.A., and others.

Table of financial data for various insurance and managed funds, including Hambro Pacific Fund Mgmt. Ltd., Richmond Life Ass. Ltd., and others.

OFFSHORE AND OVERSEAS

Table of financial data for offshore and overseas managed funds, including Standard Life Assurance Company, Bank of America International S.A., and others.

NOTES: Information regarding fund performance, currency, and other relevant details.



FOR QUALITY DEVELOPMENTS IN THE SOUTH AND MIDLANDS

**Bryant Properties**

021-704-5111

# FT LONDON SHARE INFORMATION SERVICE

## BRITISH FUNDS

**"Shorts" (Lives up to Five Years)**

Invested	Stock	Price	Last	Div	Yield
228 22M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00

**Five to Fifteen Years**

Invested	Stock	Price	Last	Div	Yield
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00

**Over Fifteen Years**

Invested	Stock	Price	Last	Div	Yield
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00
148 13M Feb 14 1984	100	10.10	10.10	0.00	0.00

## AMERICANS

Symbol	Stock	Price	Last	Div	Yield
F May Aug	100	10.10	10.10	0.00	0.00
F May Sep	100	10.10	10.10	0.00	0.00
F May Oct	100	10.10	10.10	0.00	0.00
F May Nov	100	10.10	10.10	0.00	0.00
F May Dec	100	10.10	10.10	0.00	0.00

## CANADIANS

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## INDEX-LINKED

Symbol	Stock	Price	Last	Div	Yield
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00

## UNDATED

Symbol	Stock	Price	Last	Div	Yield
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00
100	10.10	10.10	10.10	0.00	0.00

## BUILDING INDUSTRY, TIMBER AND ROADS

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## BANKS, H.P. AND LEASING

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## COMMONWEALTH AND AFRICAN LOANS

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## LOANS

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## PUBLIC BOARD AND IND.

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## FINANCIAL

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## BEERS, WINES AND SPIRITS

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## RETAILERS

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## RETAILERS (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## RETAILERS (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## RETAILERS (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## RETAILERS (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ORAPERY & STORES—Cont.

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ORAPERY & STORES (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ORAPERY & STORES (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ORAPERY & STORES (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ORAPERY & STORES (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ORAPERY & STORES (Cont.)

Symbol	Stock	Price	Last	Div	Yield
Jan	100	10.10	10.10	0.00	0.00
Feb	100	10.10	10.10	0.00	0.00
Mar	100	10.10	10.10	0.00	0.00
Apr	100	10.10	10.10	0.00	0.00
May	100	10.10	10.10	0.00	0.00

## ENGINEERING—Continued

Symbol	Stock	Price	Last	Div	Yield
Jan					



هكذا انشأنا

Financial Times Monday April 16 1984

INDUSTRIALS—Continued

Table of industrial stocks including ICI, BP, Shell, and various other companies with columns for stock name, price, and volume.

LEISURE—Continued

Table of leisure stocks including British Airways, British Telecom, and other leisure-related companies.

PROPERTY—Continued

Table of property stocks including various real estate and construction companies.

INVESTMENT TRUSTS—Cont.

Table of investment trusts including various funds and trusts.

OIL AND GAS—Continued

Table of oil and gas stocks including BP, Shell, and other energy companies.

MOTORS, AIRCRAFT TRADES

Motors and Cycles

Table of motor and cycle stocks.

Commercial Vehicles

Table of commercial vehicle stocks.

Components

Table of component stocks.

Garages and Distributors

Table of garage and distributor stocks.

SHIPPING

Table of shipping stocks.

SHOES AND LEATHER

Table of shoes and leather stocks.

SOUTH AFRICANS

Table of South African stocks.

TEXTILES

Table of textile stocks.

TOBACCO

Table of tobacco stocks.

TRUSTS, FINANCE, LAND

Table of trusts, finance, and land stocks.

PROPERTY

Table of property stocks.

FINANCE, LAND, ETC

Table of finance, land, and other stocks.

TRUSTS, FINANCE, LAND

Table of trusts, finance, and land stocks.

PROPERTY

Table of property stocks.

OVERSEAS TRADERS

Table of overseas trader stocks.

PLANTATIONS

Table of plantation stocks.

RUBBERS, PALM OIL

Table of rubber and palm oil stocks.

TEAS

Table of tea stocks.

MINES

Table of mine stocks.

EASTERN RAND

Table of Eastern Rand mine stocks.

FAR WEST RAND

Table of Far West Rand mine stocks.

O.F.S.

Table of O.F.S. stocks.

DIAMOND AND PLATINUM

Table of diamond and platinum stocks.

CENTRAL AFRICAN

Table of Central African stocks.

Espley Trust plc advertisement with logo and contact information.

MINES—Continued

Table of mine stocks including various mining companies.

NOTES

Notes section containing various financial notices and announcements.

REGIONAL AND IRISH STOCKS

Table of regional and Irish stocks.

OPTIONS

Table of options contracts.

3-month call rates

Table of 3-month call rates.

FINANCE

Table of finance-related data.

CENTRAL AFRICAN

Table of Central African stocks.





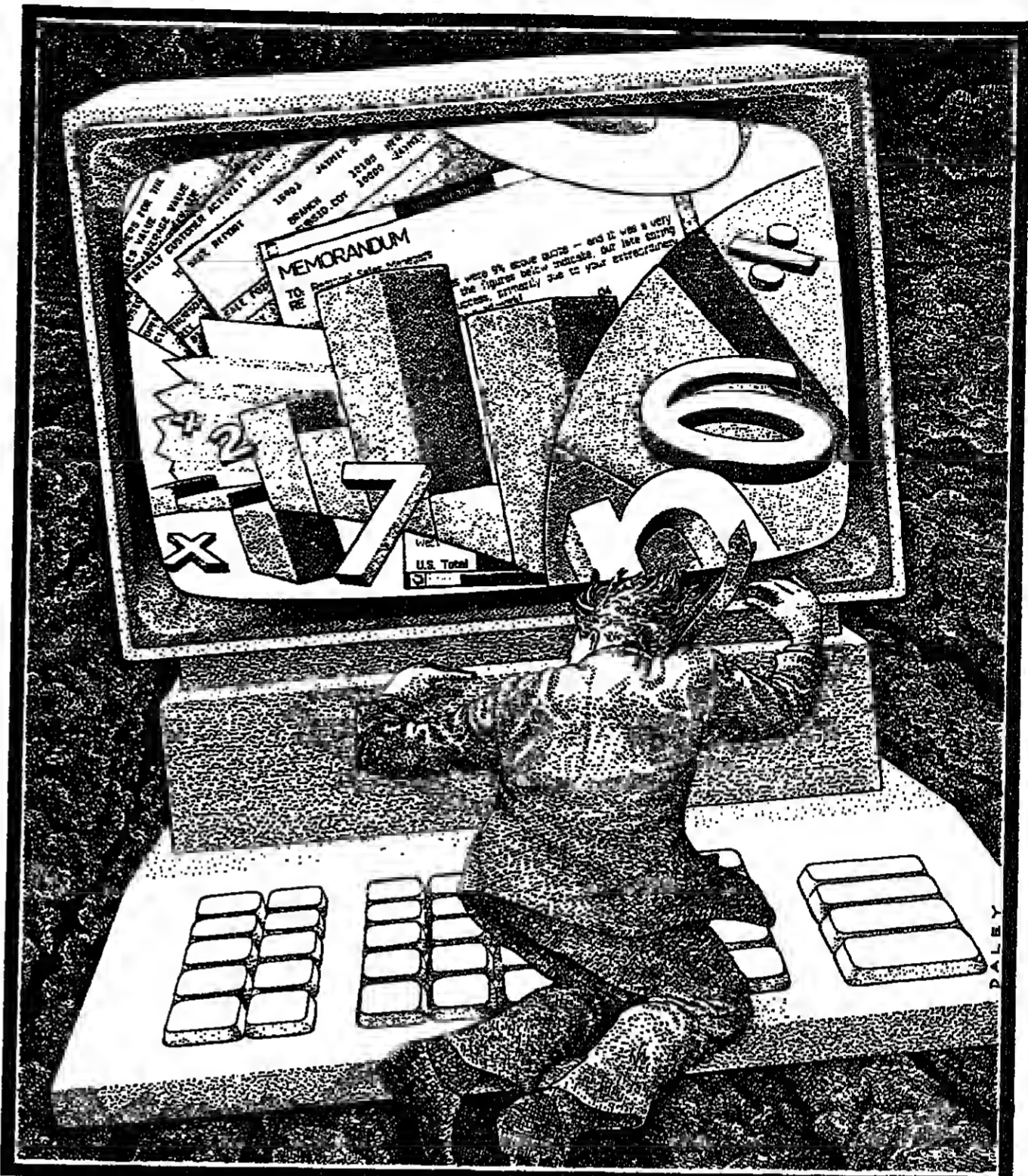


# THE DESK TOP REVOLUTION

The desktop revolution has started in earnest as professional personal computers begin to appear on executives' desks. To some, they represent a new measure of power and effectiveness. Others, perhaps still in the majority, fear they will soon be clinging on desperately, swept helplessly towards an alien digital future. This survey examines the biggest change in business technology since the invention of the telephone.

## INSIDE

The office of the future: battle lines are drawn over workstations	2	Personal computers: the goal of one terminal per employee looks attainable	4	Major suppliers: changing approach to office automation	4	Choosing the best system: key factors when making a decision	5	Software: new packages help users to do their own programming	6	Digital facsimile systems: benefits of a faster flow of information	6	Applications: getting a grasp on financial planning	7	Micro-mainframe links: plugging into the corporate network	7	Local area networks: a crucial period ahead	8	New computer-based financial service: Extel Examiner development	8	The storage systems battle: cost is a key factor	9	Voice and data links: problems of integration	9	Computer printers: growing market disproves fears of the paperless business world	12	Case study: Straight Lines moves on to system four	12	Case study: Micro Focus identifies an important new market	13	Case study: benefits of computer usage in a small business	13	Case study: the National Computing Centre's role	14	Case study: Decision-making is far easier now for Airspeed Cargo	14	Case study: security group's route to easier accounting	14	The U.S. personal computer market: a battleground for suppliers	16	Japan: software breakthrough gives big boost to market prospects	16	Britain: enthusiasm for personal computers is unmatched in Europe	17	West Germany: more aid for high-technology sectors in move to close the gap in office automation	17	Personal computer market leaders: key European statistics	18	Italy: the microcomputer market lags behind other European countries	18	Nordic suppliers: manufacturers confident they can hold their own against the giants	18	France: continuing craze for information technology	19	Computer manufacturers' revenues: European statistics	19	Case study: benefits of the Canada Line network	19	The personal computer market: two main rivals jockey for position	20	Decisions on office automation: few managements seem ready to accept automation without some cost justification	20
--	---	--	---	---	---	--	---	---	---	---	---	---	---	--	---	---	---	--	---	--	---	---	---	---	----	--	----	--	----	--	----	--	----	--	----	---	----	---	----	--	----	---	----	--	----	---	----	--	----	--	----	---	----	---	----	---	----	---	----	---	----



SEE YOUR APPLE DEALER. BEFORE IT'S TOO LATE.  
 FOR YOUR NEAREST DEALER CALL (0442) 60244.





# THE DESK-TOP REVOLUTION 2

The products you need with the service you'd like.

One year and three months ago David Jones, writing for the Financial Times, said "I have much to thank Pete & Pam Computers for in providing support". Pete & Pam Computers tries to keep in touch with its customers so that if one solves a particular problem, the solution is available to its other customers".  
Financial Times 18th, January 1983.

Two months later, the Drawing Paper, the publication for Draughtsmen, Engineering Designers, Architects and Graphics Designers, reported "Whilst the company has grown considerably, its reputation for offering help and advice still holds good".  
The Drawing Paper, March 1983.

Surveyor, the Public Works weekly, said in June "Pete & Pam Computers range of bang-up-to-date products for the Apple was, and still is, second to none, and its knowledge of the products excellent".  
Surveyor, 9th, June 1983.

In August's edition of Computer Dealer, John Hartley said "Pete & Pam Computers had to be our first choice with an excellent reputation for technical support".  
Computer Dealer, August 1983.

And Ron Ede, writing for the local Government Chronicle in August, reported "I was appointed at a time when hardware and software for the Apple was not as readily available as it is today, but I found excellent suppliers in micro computer distributors, Pete & Pam Computers. As computer professionals, we knew exactly what we wanted to get out of the Apple. Pete & Pam Computers came up with the goods and the service required".  
Local Government Chronicle, 5th, August 1983.

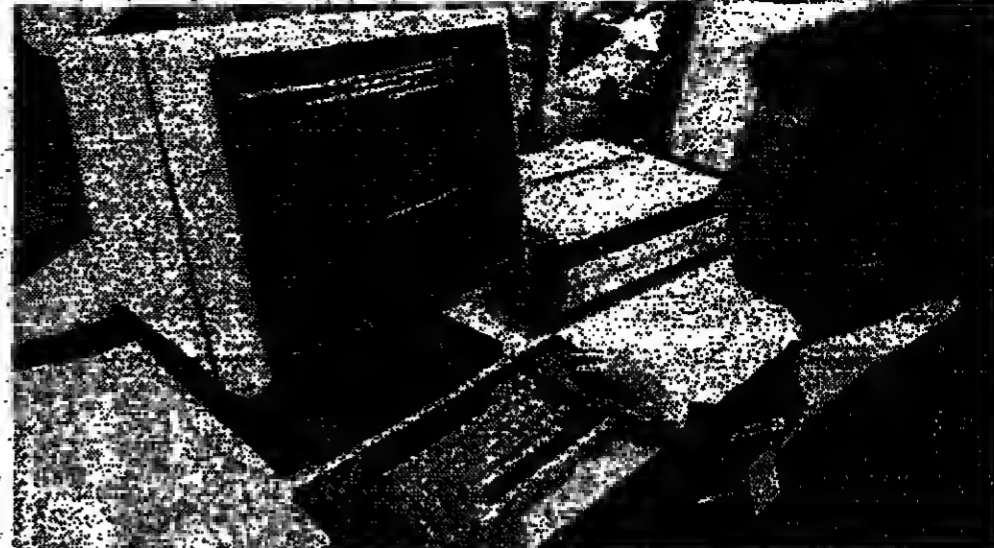
Paul Walton, in the February edition of Software, writes "Pete & Pam deals with the widest and fastest growing range of micro computer packages on the market".  
Software, February 1984.

In the Business World, the Computer World and in Public Services the opinion seems to be the same - a growing company, a growing range, yet still maintaining that essential personal touch.

**THE APPLE, IBM PC, & EPSON SPECIALISTS**

**Pete & Pam Computers**

New Hall Hey Rd., Rosendale, Lancs. BB4 6JG (0706) 217744  
1, Cleveage Rd., London SW16 6AY (01-769 1022 & 01-477 7611)  
Dale St., Bilston, West Midlands WV14 7JY (0902) 43913



● Above: The Microsoft Mouse, a hand-held screen pointing device.  
● Left: Users of the Hewlett Packard 100 touch the screen to initiate response from the computer.  
● Right: High definition screens, exemplified by the Apollo "Domain" workstation pictured here, improve graphics capability. The small pad to the right of the keyboard can be touched to guide a cursor round the screen.

Difficult decisions are now being made about the best way of moving ahead in the pursuit of office automation

## Battle lines drawn over work-stations

THE ELECTRONIC workstation for executives has always taken stage centre in scenarios of the office of the future.

With the evolution of the professional personal computer over the past decade, these predictions have been realised. Steven Jobs and Stephen Wozniak started work on the design for their "Apple" computer back in 1975, a machine produced in very small numbers. They launched the Apple II in 1977 and from that moment the revolution was unstoppable.

More than a million professional personal computers were sold in the U.S. in 1982, more than 2.6m by the end of 1983. IBM, the world leader in professional computers, expects to ship more than 1.5m of its machines this year.

BY ALAN CANE

At least 150 companies are now manufacturing personal computers—the leaders include IBM, Apple, Wang, DEC, Hewlett Packard, Sandy, Commodore, NCR, Sperry, ICL, Philips, NEC, Epson, and ACT. A new industry has grown up, making and packaging the software needed to run business applications on these machines. Its leaders include Microsoft, Digital Research, Peachtree, Vivacor, Microfocus and Lotus Development. But it would be a mistake to think that the desk-top revolution is only about the genesis and evolution of the professional computer. The picture is much more complex than that. It involves difficult decisions about the best way to move ahead in office automation. The factors which have to be taken into account include the cost of the equipment, the cost-benefits expected from their adoption, the response of office workers to the new office practices which will inevitably follow the installation of "intelligent" machinery. It will involve consideration of the kind of jobs which lend themselves to office automation and the jobs which may be displaced or lost as a result. This, of course, is a counsel of perfection. Like most human endeavours, the move to office automation is likely to involve stops and starts, mistakes, misunderstandings—perhaps with the occasional triumph. In the UK, for example, since

1981 the Government has been sponsoring a series of office automation pilot programmes at a cost of about £5m. Preliminary results were released last week suggesting difficulties and disappointments have been the order of the day, rather than unmitigated success. But there was no enthusiasm among the participants for a return to the old manual office, although they found it hard to rationalise their belief in an electronic future.

The pattern of development in office automation has been one of small practical steps taken in the shadow of massive conceptual leaps. Consider the typewriter. The first word processors became available in the middle part of the 1970s but there was no sudden rush for these new fangled machines. Instead, office managers moved to electronic typewriters, cheaper, more familiar machines that had a few observable advantages compared with electric machines—memory, automatic printing routines, spelling checkers which were derived from computer technology.

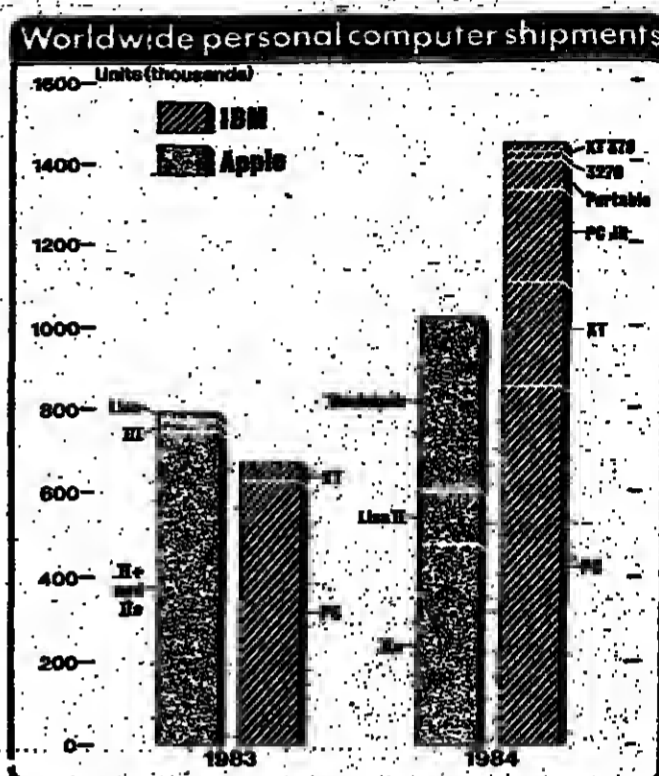
Today, there is still more immediate interest in the briefcase sized Brother "personal printing machines" costing up to, say, £500 than in fully fledged personal word processing systems. The personal computer itself is a very humble realisation of the executive's electronic workstation compared with the dreams of 25 years ago. These "dreams" generated chiefly in the Xerox Corporation, research laboratories in Palo Alto, California, centred around a screen which represented the executive's desk top, a keyboard and "mouse" (desk top screen pointer) with which to communicate with the computer and a network linking individual workstations together and to share equipment such as large file storage devices and printers.

The Macintosh-like machines, while they can be connected to mainframes for up and down loading data, are principally directed towards communications among themselves—providing, for example, support for a group of people in a single department. Note also that the emphasis on the kind of user has changed. Word processors came in secretarial tools; professional computers are designed to support the executive, professional and manager.

That means a new concern with ease of use. So "mice" have started to proliferate on desk tops while Hewlett Packard is promoting a machine with a screen you simply touch to provoke action. ("Pointing is the right metaphor but touching the screen is not sufficiently precise," said one advocate of mouse technology.) A number of companies are offering "windows"—ways of dividing the screen into a number of sections each of which can represent a separate document on the metaphorical desk top. Each of these windows can be used to screen a separate application. So an executive could have a spreadsheet open in one window, a bar chart in another, balance sheet in a third and the text of a report combining the results of all these windows in the fourth.

A third approach owing little to that of either Apple or IBM is seen in offerings from Wang and to a lesser extent DEC. Wang's approach, implemented in his "Alliance" workstations is to integrate data, word, image, audio, networking and human factors. Wang's reputation is founded on its brilliant and innovative approach to office word processing. It has yet to establish itself as firmly in the executive workstation area. It has also to be said that the Japanese have, as yet, made little progress in the West with their personal computers—but this could change dramatically as NEC and others improve their marketing channels. According to Frost and Sullivan, the New York-based consultancy, what users want most of their workstations is compatibility with other systems. "It is a common complaint. Last week, a senior executive in a London financial company rang to complain that his office was becoming a 'Tower of Babel' in information: 'There are different machines everywhere I look, and there must be 15,000 firms with exactly the same problem.' 'How do we get out of this mess?'"

Chief factor Frost & Sullivan found that in order, the selection criteria were ease of use for the typical user, software availability for standard users, ease of maintenance, the manufacturer's reputation and price. It has to be said that this hardly reflects the true world: IBM's reputation for dependability is a chief factor in the success of its PCs and it sets the standard through its operating system for ease-of-use and software availability. Nevertheless, the Frost & Sullivan research showed that over 90 per cent of executives wanted a workstation and that almost all of these were prepared to cope with the keyboard. Many executives still feel it might be somewhat damaging to their corporate image to use a workstation but research indicates that for the most part the perception of management in this regard is changing rapidly. "Seventy-one per cent replied that long-term desk-top workstations would fit into their corporate environments and the image they want to convey." (The U.S. Professional/Executive Workstations Market, Frost & Sullivan, 1983.) The projections suggest the ratio of personal workstations to mainframes will increase from 1.2 to 1.8 by 1990. The screen may well become the metaphor for the desk top but there will be nothing metaphorical about the profits to be made from selling the right workstation at the right price and at the right time.



## BY NEXT YEAR, EVEN IBM MIGHT HAVE ONE.

This is the Sanyo MBC 555. The first high performance business machine of its kind to offer the compatibility and versatility of a true 16-Bit business micro for less than £1,000 + VAT\* A revolutionary price for a revolutionary machine because with 128K RAM expandable to 256K RAM, both the twin drive MBC 555 and the single drive MBC 550 have an 8 colour graphics capability (640 x 200 dot resolution), an 8088 CPU for high-speed processing, a Centronics parallel printer interface and free bundled software. Add to this the support of a compatible

range of peripheral equipment, a comprehensive selection of software and a price tag of less than £1,000 + VAT (MBC 550 £749 + VAT) and you'll probably understand why this package is so attractive. But the real beauty of the MBC 555/550 series is that you don't have to wait until next year for them. If you want to see these two innovative machines from Sanyo's proven range of Micros phone LOGITEK on 0257 426644 or STC Electronic Services on 0279 26777 or ICARUS on 01-485 5574 or clip the coupon and we'll show you how to stay one step ahead.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Position in Company \_\_\_\_\_  
Address \_\_\_\_\_  
Tel. no. \_\_\_\_\_

Return to: Marketing Dept., Sanyo (UK) Limited, Sanyo House, 8 Crayke Road, Watford, Herts.

SEE SANYO, THEN DECIDE

**SANYO**

**The Commuter Computer**

Time spent between work—on the road, in the airport, on a train—becomes less with the battery powered Sharp PC-5000 Commuter Computer. It's as light as a briefcase, completely mobile, and capable of performing as many functions as an IBM PC, for only £1,639 with immediate availability. Includes silent A4 printer and 128K bubble memory. SuperCalc 2, SuperWriter, SuperPlanner, dBase II, available.

**SHARP**

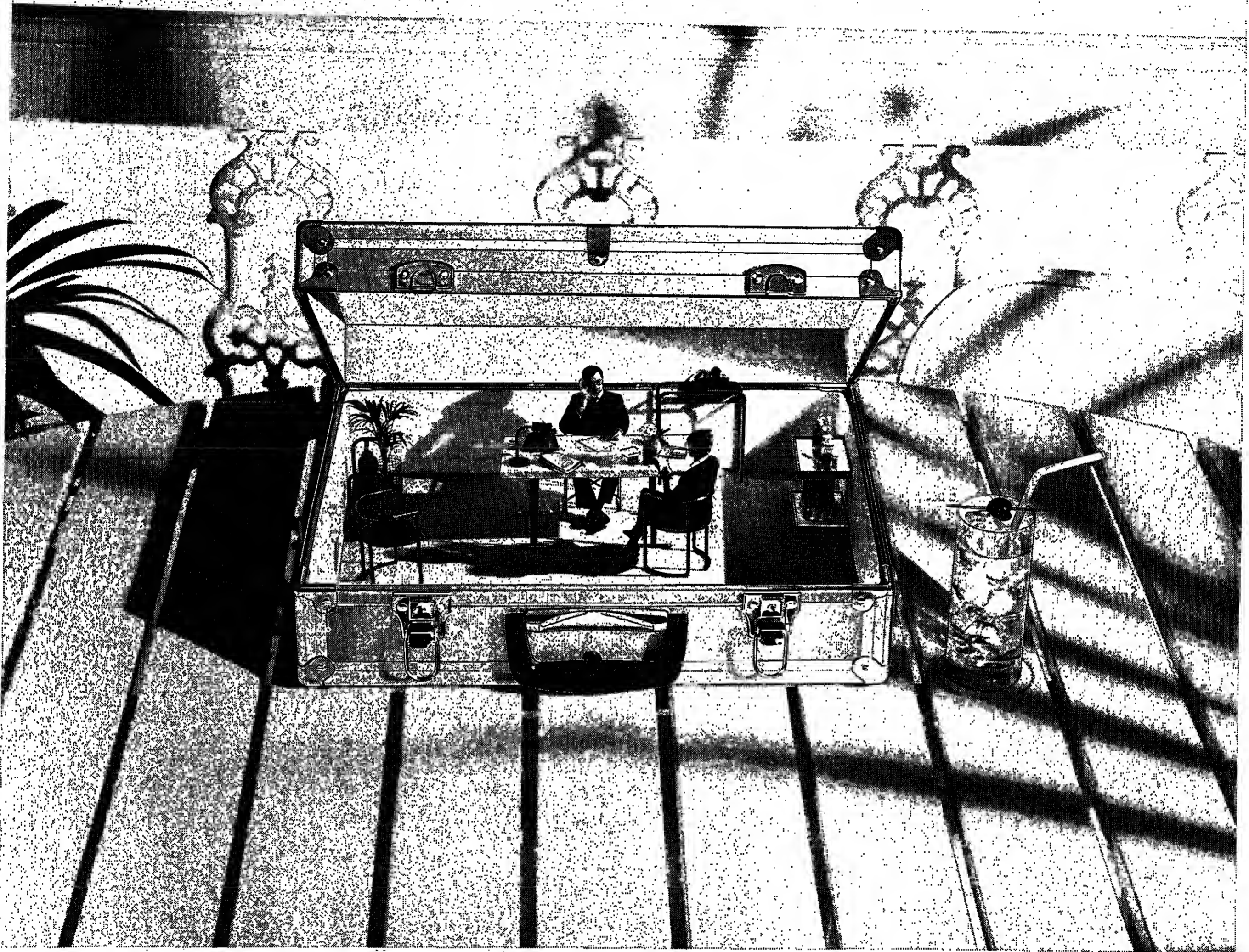
PC-5000  
MS-005

MICROS FOR MANAGERS  
148 GLOUCESTER ROAD, LONDON SW7 4JH  
TEL: 01-477 5125 - TELEFAX: 8120 REF 8076

Selfie in 1/10



# SHARP ANNOUNCES THE PORTABLE OFFICE.



It's something the computer world has been striving to achieve for decades. And now Sharp technology has cracked it.

The new Sharp PC 5000 16-bit portable computer. It weighs only 5kg. It travels in a briefcase just 326mm x 305mm. Yet it carries with it all the power of the full-size computer back at your office.

Because apart from its own exceptional capacity, it allows you to dial in to your own office computer for added

information, from any telephone line, anywhere in the world.

Its capacity is, therefore, unlimited. The PC 5000 computer is, quite literally, a portable office.

And because it uses a 'bubble' memory — more robust than floppy disks — you can even use it in transit, on trains, boats and planes. This remarkable machine has liquid crystal display. And is powered by rechargeable 8-hour batteries. An integral printer is also available.

All this, to help stamp out that frustrating phrase 'I'll get back to you.' Words that have lost a million business deals.

Whether it's copiers, computers,

typewriters, cash registers or calculators, look to Sharp. Business machines that put people first.

Sharp Electronics (UK) Ltd., Business Equipment Division, Sharp House, Thorp Road, Newton Heath, Manchester M10 9BE. Telephone: 061-205 2333.

Please tick as appropriate for further details:  
 Computers  Copiers  Electronic Typewriters  
 Electronic Cash Registers  Calculators

Name: \_\_\_\_\_  
 Position: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Address: \_\_\_\_\_

Tel. No: \_\_\_\_\_ FTZ

The world of  
**SHARP**   
 where great ideas come to life.



# THE DESK-TOP REVOLUTION 4

Professional personal computer sales are growing rapidly and the one terminal per employee goal looks increasingly attainable

## Moving towards the one-to-one ratio

THE professional personal computer is the key to the desk-top revolution.

It is becoming the de facto executive workstation, the computer terminal which combines voice telephony with data transmission, electronic mail with graphics capability, word processing with data processing.

Best estimates suggest that the market for professional personal computers (PPC) is growing at about 50 per cent a year in the U.S. and about 30 per cent a year in Europe. The average rate of growth between 1982 and 1985 is about 40 per cent world wide.

But virtually none of the personal computers being shipped today—and the figure was 1.5m for 1983—are yet able to feature all the capabilities of the executive workstation. There are sufficient indicators, however, to suggest it will be a comparatively short time before machines combining all these features are as common on desk tops as the telephone is today.

BY ALAN CANE

without having to go through the tedious business of storing information already processing and loading the computer's memory with fresh instructions. It seems obvious, but so new is the professional personal computer business that until Lotus launched 1-2-3, that capability was simply not available.

Now Lotus is trying to do it again with a program called "Symphony" which adds word processing and communications to the basic package. It may not find it so easy second time around.

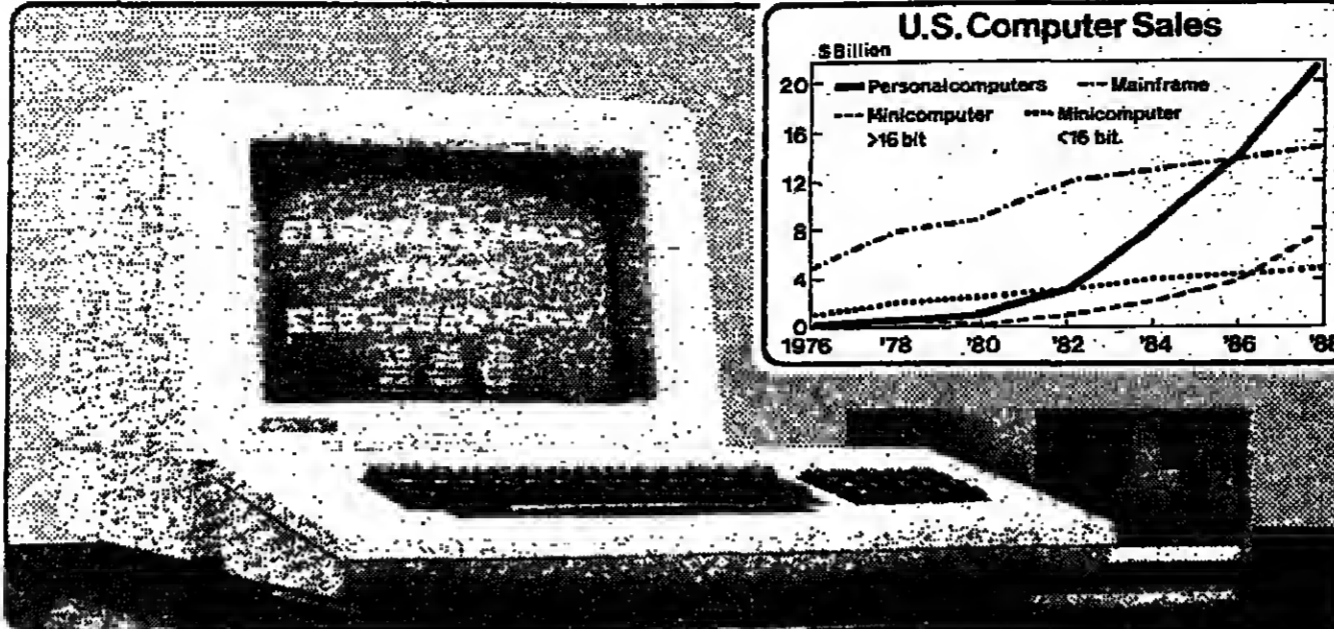
Most significant of all, the first software packages which make it possible to link microcomputers to mainframes as if they were conventional computer terminals are beginning to make their mark.

Why should that be important? Well, personal computer users in large organisations frequently want to be able to make use of the powerful computer programs already developed for their company's mainframe machine.

They may want to be able to call down to their own machine records held in any one of a number of electronic files maintained by the company, or they may want to be able to treat a network of personal machines as data entry devices.

Among the leading companies which have introduced micro-mainframe link packages are MSA, the world's largest independent software house, together with McCormack and Dodge and Informatics.

According to Mr David Ferris of Ferris Corporation, a UK consultancy specialising in professional personal computing said last year: "MSA is particu-



lar in doing good things. They have now accumulated a lot of experience in the area. Their product, called "Peschlink," is much improved in its second release.

The shift towards integration in the workstation is illustrated by the fact that late last year MSA announced that its Peschlink software could be taken from a mainframe computer file, downloaded to the microcomputer and then processed using the facilities built into 1-2-3.

All these developments suggest there is no doubt that the

professional personal computer will become the executive workstation. But in the jungle of microcomputers available today, how can the true PPC be identified?

First, it is a truly professional machine, typically based on a fast and powerful 16-bit or 32-bit microprocessor (16-bit machines handle 16 basic information units simultaneously; 32-bit machines handle 32 and approach the processing capability of a mainframe computer).

But although most of the principal vendor's products fit this description—the IBM PC, the Wang Professional Com-

puter, the new range of AT&T desk top machines—it has to be said that many perfectly adequate professional machines—the Apple II, for example, use 8-bit chips and have proven fast enough for most business purposes.

There is also a huge amount of professional 8-bit software available. The future belongs to the faster machines, however.

Whatever processor is used, it will be fast enough to run large financial modelling and analysis packages like Lotus 1-2-3, and it will have considerable graphics capability to deal with the generation of tables, bar charts and the like.

Personal implies a one-to-one relationship between staff and machines a ratio which manufacturers believe to be possible at some distant date in the future. At present, surveys suggest that in reasonably advanced companies the ratio is 17 staff to each personal computer.

Electronically advanced companies which depend on computer power are moving towards the one to one situation. Mr Calum Macaskill, deputy chief general manager of the world's largest building society, the Halifax, has been quoted as saying: "Computer power is the horse power of our business. One in three of our staff now works with a computer terminal all day and 80 per cent of our staff use computer technology at some time during the day."

IBM, the world's largest computer company, has a ratio at present of 2.5 staff to each computer terminal, and sees a ratio of between two and three staff to each terminal as the norm for every company in the future.

There are those who would argue that essentially there will be more than one computer terminal per employee, looking forward to a point where each staff member would have his own desk-top computer, but this view also has a number of stations, dedicated to particular functions.

There might also be a number of portable computers which staff might take out into the field or transport between office and home.

Portable professional personal computers have some way to go to match the capabilities of desk-top machines, but they are catching up considerably. Advances in technology push back the frontiers of what it is possible to do in a small space. Machines like the Husky and Hunter, the Grid Compass and the Gavilan—tiny machines that slip into a briefcase yet have liquid crystal or electro-luminescent displays on which word processing or graphics creation are perfectly possible—are changing ideas of mobile computer power.

Expensive. According to Mr John Eilenby, founder of Grid Systems which makes the beautiful but expensive Compass: "We are embarking on a new generation of products which will complement the desk-top variety, and that portable computers will over the years become a major business tool."

He says: "I also believe that they herald a major breakthrough in computing culture which will significantly change not only the standards of users and telecommunication authorities, but will affect manufacturing and component design substantially."

IBM clearly thinks so and so does Apple. The two leaders of the professional personal computer business have launched or are about to launch their own portable machines. Within years the desk top revolution could become the desk-top-and-hip-pocket revolution.

Jason Crisp highlights trends among the computer manufacturers

## Big producers change gear

ABOUT four or five years ago there was a sense of weighty and authoritative reports on office automation. In general, these tended to paint a picture of a highly sophisticated office using a comprehensively integrated network of computers, complex equipment and installations.

As early as 1981, it had become more or less obligatory for equipment suppliers in the U.S. to spell out their office automation strategies. When Hewlett-Packard, Digital Equipment (DEC) and Wang announced their office automation strategies in close succession that autumn, several analysts unified that they were late.

By then, practically every company from the world of computers, office equipment and telecommunications were finalising their plans to become a major player in this new integrated world of computers and communications. But everyone saw the customer as the Fortune 500 type of company.

About that time a fierce debate grew around local area networks, supposedly the essential communications channel to link workstations: computers, wordprocessors, laser printers and every other electronic device imaginable.

The big question was, would everyone opt for baseband systems like Ethernet backed by Xerox, Intell and DEC or would they go for a broadband system like Wangnet, which can carry much more information such as voice and video?

But while the talking was going on two things were happening in the marketplace. One office automation equipment—in the conventional sense—being bought was word processing. Two, an unexpected and dramatic explosion was beginning in the personal professional computer, the desktop revolution had started.

"The development of the personal computer has made it the box of the future, the universal terminal. It has become the key route to office automation although I doubt most users recognise this at the moment," comments Neil Farmer, senior consultant at Butler Cox, one of the leading consultancies studying office automation.

The extraordinary success, particularly in the U.S., of IBM in personal computers has put beyond question that it will be the major force in office automation. In addition to its dominance of the mainframe computer business, it is now expected to produce about 50 per cent of the personal computers sold this year, many of which will be extensively used in large organisations.

IBM also has a 20 per cent stake in Rolm, the fast growing Californian telecommunications group, which greatly strengthens its position in that field. Wang, the U.S. wordprocessing company, is generally acknowledged as the second strongest force in office automation at present through its success in word processing and small business computers. Wang has defined the key technologies of office automation in six areas: word processing, data processing, image processing, audio processing (voice-mail), networking and human factors.

Wang's first major thrust of Apple.

office automation products launched in 1981, were for the most part aimed at communicating mainly with each other. But in October last year the company launched an open access policy which should enable its products to be integrated with those of other manufacturers.

The move towards improving communications between products of different companies is becoming much more commonplace. Many of the leading computer companies—such as Digital Equipment Corporation and Data General—are working with a number of telecommunications companies—like Rolm, Mitel or Northern Telecom—to establish a common standard to enable communications between computer equipment and private automatic branch exchanges (PABXs).

DEC itself must count as one of the world's potential leaders in office automation, a recent report from International Data Corporation on Major Vendor Strategies comments: "DEC, in terms of units, is the world's second largest computer company and it is out to achieve the same status in the office world."

While IDC notes that it is difficult to define ranking within the office automation field it says everyone knows what being number two means: "being bigger than Wang and pushing IBM."

Claims. But for most of the industry the chance of becoming a major supplier of all types of equipment is not a reality. Even giants like Xerox, which has made some major claims to become a leading office automation supplier, finds itself succeeding only in some specialised areas.

There is a very great number of other companies seeking to make an impact in office automation, including the leading mainframe companies such as Honeywell Information Systems, Burroughs and ICL, to the leading communications groups such as American Telephone & Telegraph, Northern Telecom, Mitel, LM Ericsson and Plessey.

Potentially the greatest challenge from the telecommunications industry comes from AT & T, which has equity and marketing links with Olivetti, the leading European office equipment suppliers. Earlier this month AT & T launched its major range of computers. But it is likely to take AT & T considerable time to become a major force in computing.

The role of the telecommunications companies in general in office automation is growing. The PABX, for instance, has become much more widely accepted as the reliable centre for any network. The main advantage is that the network and wiring is already in place. In addition, new techniques are making it possible to send far more information along a pair of copper wires, which means capacity is only needed where very high volumes of data have to be sent.

But few can doubt that the major impact in office automation has come from the personal networking and human factors—especially from IBM PC, and Wang's first major thrust of Apple.

## For the ordinary desk job, however, you could probably get away with an IBM PC

Unquestionably, IBM's PC has set the standard for personal computers.

By now you'd think it impossible to get executives to part with them.

Except they do. Every time they leave the office.

Could we, someone asked, take the best features of the IBM PC, take the space of half a briefcase and come up with a more personal, personal computer?

The result of this challenge is the GRiD Portable Micro. In its own way becoming standard hardware for those who need to work as effectively outside the office as in.

Although weighing only 10 lbs, the GRiD is far from light on power. There's 512KB of RAM. Another 384KB, a whole double-sided disk worth, of bubble memory.

Unlike the humble portable, GRiD has a full-size screen display. And with its MS DOS operating system, you can run all your familiar PC software.

Like WordStar, Multiplan and Lotus 1-2-3.

GRiD's own software should prove instantly familiar too, be it a spreadsheet, database, word-processing or graphics package. Because learning to use one program teaches you to use them all.

Finally, you'll notice the GRiD doesn't come out of something looking like a sewing machine box.

In its elegant, black magnesium case, it's as personable as it's personal.

But as you might expect, there's a price to be paid for such an exceptional machine.

Should you have an ordinary desk job, your company may well decide it's unaffordable.

But should your office usually look more like a restaurant, or a construction site, or someone else's boardroom, they may well decide it's indispensable.



**GRiD**

It isn't for the ordinary desk job

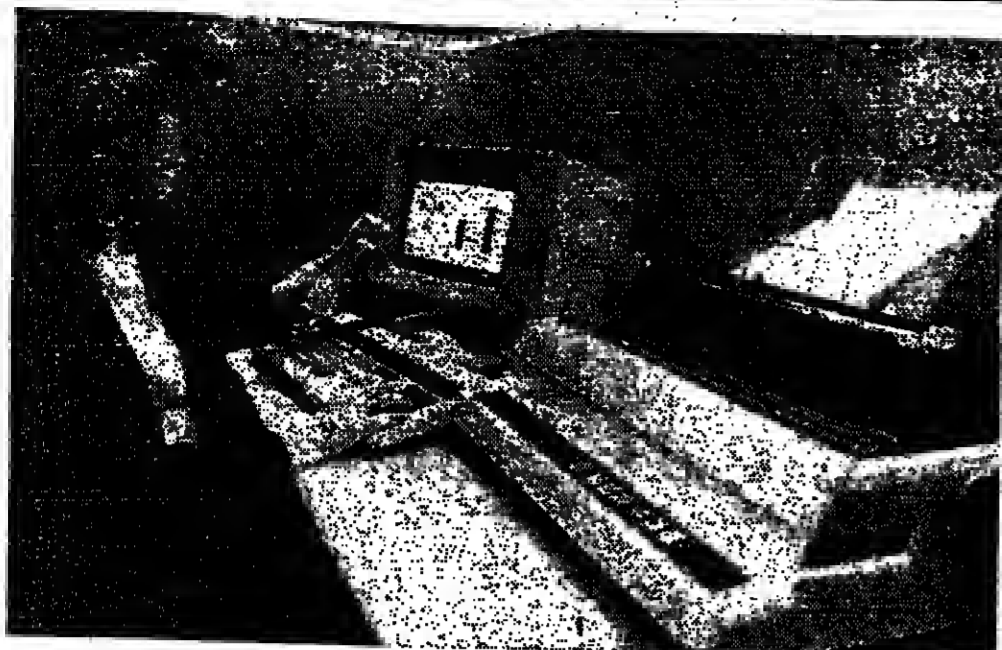
Sole UK Distributor: Thame Systems, Thame Park Road, Thame, Oxon OX9 3XD. Telephone: 084 421 5471

IBM is a registered trade mark of International Business Machines Corporation

GRiD Computer Systems Ltd, Unit House, 33 London Road, Reigate, Surrey. Telephone: Reigate 41211



## THE DESK-TOP REVOLUTION 5



Left: Information Technology (ITL) pioneered workstations with the capacity to add voice "annotations" to text stored in electronic files. Centre: In a City of London showroom, a salesman demonstrates a Tandy TRS 80 computer to a prospective client. Right: Mitel's "Kontakt" workstation integrates screen, floppy disk drive, keyboard and telephone handset



Choosing the best operating system is becoming increasingly complex. Claire Gooding offers some advice

# How to pick a way through the maze

IN THE beginning you want one application and, at first, that's enough. You buy (according to the marketing people) "a total solution," and the operating system comes as part of it. So why bother about such technicalities as an operating system?

The answer is that the operating system is something of a political choice. Once installed, it dictates the environment in which all other programs will have to run.

In the same way that it hardly matters whether your videotape is VHS or Betamax if your only wish is to see "The Sound of Music," certain applications look exactly the same under different "host" operating systems. But the decision affects any later purchases; once you've chosen, you're limited to buying other software within that environment.

So it is as well to be aware of the differences, the costs, short-term and long-term, and the varying vistas (or closed alleyways) offered by the different operating systems.

It is no longer a question of whether to run CP/M or MS-DOS, the best-known and long-debated of the micro-computer operating systems.

The decision is more complex, and depends on whether you want a multi-user or single user, multi-tasking or single-tasking system, and networked or not.

Terms tend to be used very loosely in the computer industry.

the packages. Single-user systems are the Penny Plain option. CP/M and MS-DOS are both single-user systems. You sit at the screen and do one job at a time. If you wish to print something, then you must leave the current task, run the print job, and then find your way back to where you were.

This has long irritated users who often need to look up something in another file, or who become impatient waiting for a heavy processing job which ties up the terminal. Multi-tasking systems are the next step forward. Some multi-tasking systems simply allow a task to run in the background, "concurrently." You still have to get out of one task or "mode" before kicking off another, although more sophisticated systems "freeze" one screen, and let you back in at the same place again when you have looked up that elusive value elsewhere.

Digital Research, originator of CP/M, was one of the first companies to make things more convenient with its Concurrent CP/M. Windows bring another dimension to multi-tasking. The revolutionary concept was introduced by Xerox's famous Smalltalk system, whose investors latched the business of logging in and out of different "modes."

The importance of using a standard operating system is access it gives to popular software packages, yet the standards themselves have different "flavours," which in turn affect

the solution: emulate that high-tech piece of office equipment, the desk, which allows you to have more than one piece of paper on it at a time. Windows enable several tasks to appear on the screen simultaneously, though the limit most systems (and people) can handle is four.

Windows are undoubtedly a breakthrough for the single user, although they demand some fairly heavy engineering. Apple's Lisa, specifically built around the concepts of windows and pictures, paid for the novelty with a notoriously slow response.

More seriously, it demanded applications packages custom-built for its glamorous environment—not easily coaxed from the software suppliers whose eyes were fixed on the standard as set by IBM. The IBM Personal Computer, using the PC-DOS operating system based on Microsoft's MS-DOS, was the bandwagon everyone wanted to ride.

Like many successful products, MS-DOS was weighed down by obligations to its patron, IBM, and to its existing users. But Microsoft could afford to make haste slowly. Its Windows product, making it possible to run several MS-DOS tasks on one screen, is expected later this year.

Its main push is to make operating systems much easier to use. To do this, Microsoft makes use of pictures ("icons") from which the user chooses the function. A "mouse" controller is rolled along the desk to point the arrow to the appropriate place on the screen.

Microsoft has also concentrated on providing its own applications for the MS-DOS windows. Microsoft's Word, and its spreadsheet Multiplan, are now big revenue-earners in their own right.

Unsheltered by IBM, rivals such as VisiCorp and Digital Research had to be more nimble. Digital Research has been offering Concurrent CP/M for 18 months and VisiCorp's VisiOn multitasking environment for the IBM Personal Computer is well ahead of Windows.

While not tied to IBM's apron strings, Digital Research is well aware that IBM's Personal Computer under PC-DOS has swelled the ranks of sophisticated 16-bit applications, much as its own CP/M did for the earlier eight-bit machines.

It therefore adopted an "open door" policy, and in the latest version of Concurrent CP/M, Release 3.1, allows a mixture of operating systems and applications to run on the same screen. In "PC-mode" one window can run an MS-DOS spread-

sheet, for example, while another runs a CP/M job—or another MS-DOS task, even another spreadsheet.

It's purely a matter of what is most convenient for the user," said Mr Paul Bailey, who heads Digital Research in the UK. "People often need to switch tasks, and the application is still the most important aspect of the environment should, and does, come second."

Microsoft disputes that this enslaved MS-DOS is as advanced as its current versions, but the idea is undoubtedly a clever one. Now that IBM has fostered a generation of applications, other manufacturers can go gleaming, and offer users the best of both worlds.

Olivetti, Siemens, Honeywell and British manufacturer FTS are among the takers for Concurrent 3.1. The new version supports multiple-users as well as multiple tasks.

Multi-user systems demand more of the machine—and often of the user, too. Single-user systems can be single minded about the provision of a comfortable working environment for the user. Multi-user operating systems share the processor between many users and have to cope with such complex tasks as managing machine resources, locking files and records so that simultaneous users don't muddle the data, and keeping

peace between priority tasks which fight for machine resources.

Because of all the engineering needed in multi-user operating systems, they tend to be a lot more powerful, but pay less heed to being easy to use.

In a multi-user system, the "desktop" computer ceases to be a strictly personal tool, and becomes part of a working environment, with people able to share data and files. This has advantages, with future expansion in mind, although the initial entry-price might look high next to the same number of single-user machines.

Alternative Networking is an alternative where each user has a "personal" processor, but all are linked.

While there are multi-user "upgrades" of the smaller operating systems, most eyes in the industry are fixed on Unix, originally written by U.S. telecommunications giant AT & T, as the lingua-franca of multi-user systems. While portable, Unix comes in various forms and versions. Microsoft sells a robust version called Xenix, much enhanced for commercial use, and is working hard to provide a compatible path from MS-DOS to Unix—two standards worlds

apart. Unix has its roots in research and science, and has been slow to adapt to its new commercial environment.

Manufacturers have adopted the system with enthusiasm, but it has taken some time for the software suppliers to catch up. However, Unix satisfies the need for a portable operating system, providing a common environment across different machines, and given time it will be standard.

It does not have the multi-user field to itself; another long-established multi-user operating system, Pick, is also becoming more popular. It may become complementary to Unix as it provides an inbuilt database and is easier to use, as well as fostering custom-built applications. These are areas in which Unix is still weak. Unix teamed with Pick would be an ideal solution.

Micro-mainframe links deserve a mention, as they provide a route (usually one-way traffic), between micro and mainframe. Using them demands some familiarity with the environment at both ends of the link, however.

In fact, the glaring thing that all the operating systems have in common is that, however "friendly," they demand more than a nodding acquaintance. So far no one has got around that problem.

# "Technology always develops from the primitive, to the complicated, to the simple"



Computer technology exemplifies the rule. In the last thirty years, computers have evolved from huge primitive dinosaurs to compact, efficient tools. As yet, most of them are still complicated. But the process goes on.

From its beginnings, Nixdorf has worked to make computers simple. You see, we did not start at the mainframe end of the business and wend our way down to the workstation.

We started at the workstation, which places a high premium on simplicity, and worked our way up. So it should come as no surprise that Nixdorf has

built some things into its computers that most other computer companies are just beginning to recognize as being important.

Software that is friendly to the non-technical user. For us at Nixdorf it was not enough to make our computers "user-friendly" in the broad sense of the word. We had to make them easy to use even by people intimidated by computers. And we did.

Most people who are introduced to a Nixdorf computer can begin to use it productively within a few hours.

Ergonomics. We design our computers to be flexible to the human body, as well as the human mind. So our screens adjust to different people's heights. Screen colours are easy on the eye, to eliminate strain. Even our chairs and consoles are designed ergonomically, to fit the human need—not the computer's.

The goal is: simplicity. The easier computers are to use, the more they will be used, increasing productivity enormously. The modern world demands it. Nixdorf meets the demand.

Nixdorf Computer Ltd.  
125-135 Staines Road  
Hounslow, Middlesex TW3 3JB, England  
Nixdorf Computer AG  
Fürstenallee 7, D-4790 Paderborn  
Telefon 052 51/50 61 30

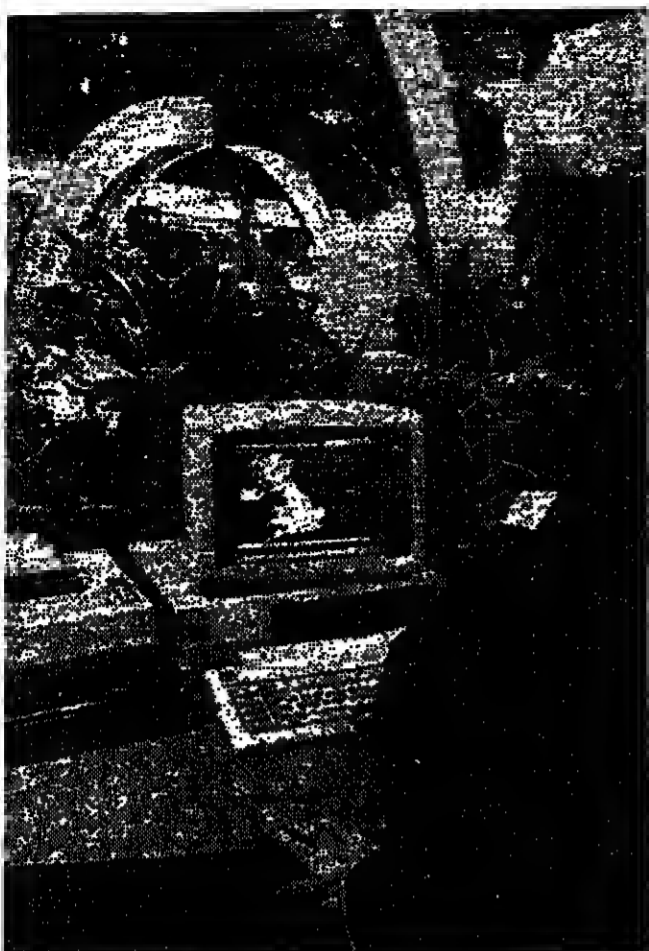
**NIXDORF**  
COMPUTER



# THE DESK-TOP REVOLUTION 6

New software packages help users do their own microcomputer programming

## Software 'stands between man and machine'



The market-leader shows its paces. This is the IBM PC demonstrating its ability to capture Prestel pages. The IBM printer to the left is, in fact, a badge-labelled Epson FX-80

A SENIOR IBM technician once noted that "software stands between man and the machine." This has become increasingly evident since computers moved out of the air-conditioned computer rooms on to desk tops.

As more and more people are confronted with the wondrous machines, their inadequacies as tools show up with crystal clarity.

It is all very well to have the latest transportable, multi-user, all-purpose, twin-floppy, super-micro sitting on your desk. But the burning question, once it is plugged in, is what to do with it.

Certainly, one route to salvation is to pay out a bit more cash and buy an appropriate software package to do the things you want to do. But very often the packages available do not cater for the specific task that you want to perform.

This inevitably means that a special program is required. Depending upon the complexity of the task there are two possible approaches to getting this special program. One involves hiring an expert to write it for you—and the other involves rolling your sleeves up and doing it yourself.

If computer programming is something that you have never contemplated before, it can be a daunting prospect. Fortunately, some enterprising software experts have recognised that not everyone wants to learn how to fiddle around with Basic or Cobol and have devised programming aids.

The theory is that you specify what you want to do and the "aid" will go off and do the programming bit for you. A glance through any of the computing magazines (of which there are plenty) will show a number of advertisements for products purporting to do just this.

It sounds simple. Find a product that will run on your microcomputer, sign a cheque for the sum required and wait for the disc/cassette to arrive.

Of course, like most things to do with computers it is far from simple and very often the product turns out to be a lot less than it seemed to be in the advertisement.

First of all, there is likely to be a large (and very often unreadable) manual that you will have to read and digest before you embark on your programming career.

Secondly, the product probably will not really do your programming for you—but merely build the "code." This highlights an important difference between "programming" and "coding."

Programming is the business of defining a problem and devising a workable solution. Coding is the business of translating that solution into the notation that your microcomputer will understand.

All of the so-called "program generators" application generators, and the like will do the latter. So far, no one has managed to devise a product to actually make programs. This is the stuff of the Fifth Generation and, perhaps, one day maybe there will be a true program generator as a result of the enormous research effort being expended in this area.

For the time being, we shall have to be content with ways of making the process easier.

This is the main area where the program generator can help. But remember that programming is distinct from coding in something that has yet to be successfully automated.

Given this gap between what the suppliers seem to claim and what they actually offer, there is still plenty of scope for what is called "end-user programming." The term end-user is computer industry jargon for the person who has to live with the system and make it work.

Many of the generator products around do help end users to build their own systems with some constraints.

The constraints come from the simple fact that if a tool is made easy to use then it inevitably suffers from a lack of power. In fact ease-of-use usually comes about as a result of restricting the options available to the user—in much the same way that a simple camera is easy to use because it does not allow the "user" to control every aspect of its operation.

Restrictions

So programming aids are usually restricted to one area of endeavour—the major one being to handle the problems of maintaining and presenting the data in a database or filing system. As one of the major applications for microcomputers is to keep personal files it is no surprise that this should be a well populated area for such aids.

Query languages, as they are called, have been around for some time on larger machines and are often included as part of a database product. A typical example of the use of a query language would be to search through a customer database to obtain a list of outstanding creditors. IBM has been winking hard on these years and has devised a number of products to help in this area.

Its "Query by Example" program is a case in point and enables users to ask questions

in something resembling English.

If all you want to do is to produce reports or display screens of database information, then this sort of thing is fine.

Similar features are built into products for microcomputers around database systems such as Ashton Tate's dBase II. Autocode from Stemmox in London and Quickcode from Fox and Geller provide for querying this database product, as well as allowing updating of the database. Both of these products will run under either CP/M or MS/DOS, and cost around £300.

One of the most famous applications generators is a product called "The Last One," supposedly "the last program you will ever need." Costing between £100 and £300, depending upon the machine, this goes somewhat further than just being a means of maintaining and handling files of data.

The emphasis is still on the handling and the product is best suited to commercial applications.

A recent trend in software for microcomputers is the emergence of the so-called integrated package. The best selling Lotus 1-2-3 product which includes a database, a spreadsheet and a graphics presentation module is the leading example.

These products get around the problem of programming in a different way by offering a set of general purpose tools that can "talk" to each other.

A user can perform some manipulation on figures from the database using the spreadsheet program and then display them using the graphics features.

Judging by the success of this type of package, this could be the way that most people will do their "programming" in the future. Instead of building a set of programs to do specific jobs, they will use these tools to do their work.

Already, these products are being extended to include word processing and links to main-frame systems to access corporate data.

Eventually, they will probably include features that will enable sophisticated manipulation of databases along the lines of the expert systems talked about in the context of Fifth Generation computing.

Then, perhaps, we shall see computer systems that can take on a lot more of the burden of programming than at present. In the meantime a couple of recently published books on program generators may be of help.

Chris Naylor's book *Programs that Write Programs* (Sigma Technical Press) is an introduction to the subject for micro-computer-users and contains a number of reviews of current generator products.

The National Computing Centre has also published what it calls a state of the art survey on *Applications Programs Generators*, which is aimed more at larger computer users but does contain some details of products for micro-computers. Both books are distributed through John Wiley.

The latter book reveals some interesting figures on the usage of applications generators. A survey of some 33 organisations which acquired a generator product shows that after purchasing it nearly 60 per cent of their programs were created using the generator.

Development method	Before acquiring generator		After acquiring generator	
	%	Number	%	Number
High level language	81	48	49	28
Program generator	6	3	58	35
Other methods (external software house, packages)	13	7	2	1
	100	58	100	64

Source: National Computing Centre

### Substantial developments in digital facsimile systems

## Benefits of more rapid data flow

THE CONCEPT of facsimile has been around since 1842, when Alexander Bain carried out the original work. But it has only been the last 12 to 15 years that facsimile has been developed for day-to-day office use.

The newspaper industry was the pioneer of facsimile for the transmission of photographs and articles from distant locations to printers from the 1890s.

Today, equipment manufacturers are trying to increase its use in business. It has to compete with tele-long established in commerce and industry.

Manufacturing is now dominated by Japanese manufacturers. Indeed it has been found and the Far East where technological development and use have been the most rapid.

At present the world total for facsimile equipment is less than 1m units. This is split between 450,000 in Japan, 500,000 in the U.S. and 65,000 in Western Europe.

Britain accounted for 25 per cent of the West Europe market in 1983 where there are 14 suppliers. Growth is between 20 and 30 per cent in the UK. Among the competitors are Canon, NEC, Panasonic and Toshiba from Japan, Multhead, St. Plessey, Intelec, STC, Infotec, Rank Xerox and Siemens.

Some of these suppliers do not make their own equipment. Canon, recognising the potential of facsimile, entered the market less than two years ago and has already made inroads into the UK market.

The principle behind early analogue facsimile transmission equipment is extremely simple. The text to be transmitted is wrapped around a drum which spins. As it does so an arm which contains a photoconductive drum scans the drum.

This detects black (letters) and white (spaces) areas. These are converted into an electrical signal which can be sent down the telephone line.

Improvement

At the other end, the reverse happens and the electrical signal is usually transferred to a less sensitive paper drum.

Facsimile equipment has now improved dramatically and some systems have done away with spinning drums and use linear scanning. Instead, electronic controls have dramatically reduced the time of transmission.

This has been achieved by a technique called data-compression which simply codes the information during scanning so that it does not transmit all the white spaces which, after all, contain no information.

At the other end of the line, the receiver reconstructs the spaces, according to the code. The evolution in facsimile has led to three classes of

equipment collected into groups according to their speed of transmission. Group 1, which takes six minutes to send a single sheet of A4 paper, is not manufactured anymore and is virtually obsolete. Also this group is incompatible with more modern Group 2 which takes half the time to transmit and Group 3 which is a sub one minute per page.

The benefit of faster transmission is not just time it is considerable savings in telephone costs especially international calls. Along with the sub-minute transmission which can be as fast as 15 seconds—is more compact desktop models.

Even faster

On the horizon is an even faster Group 4, now the subject of discussion with the British Facsimile Industry Consultative Committee, BFICC, the facsimile industry body and the CCITT, the international organisation which sets telecommunications standards.

BFICC was formed in 1972, following the Group 1 standard from CCITT, that although they complied with the standard, they could not properly communicate with other suppliers' machines.

Now, the work closely together to ensure that standards are universal. Manufacturers, however, are unlikely to introduce Group 4 equipment for at least two years in order to exploit the existing markets for Groups 2 and 3.

Group 4 will be a completely digital machine both for scanning and transmission unlike today's analogue methods of facsimile communications. Neither will it be compatible with Group 2 or 3.

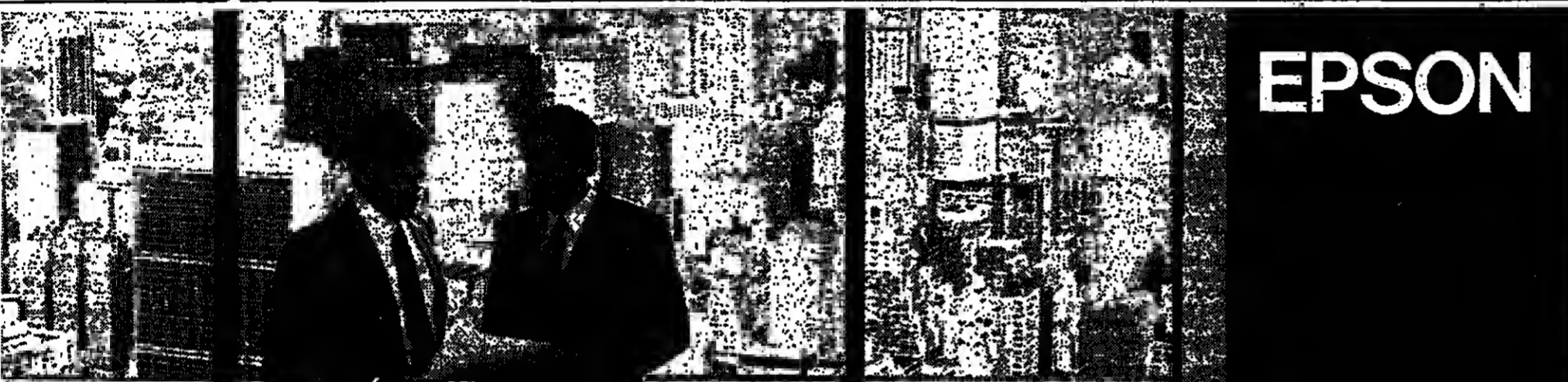
Makers of facsimile admit that there is a need for strong marketing to promote the advantages of facsimile compared with telex, for example. Letters and reports do not have to be transcribed before transmission so reducing errors.

It can handle photographs, drawings, notes and diagrams, no specialist skills are required and facsimile can transmit drawings, sketches and special layouts.

Some machines offer enlargements and reduction in size of transmitted copy. It can even act as a photocopier and the Group 5 machines bear a strong resemblance to them. As well as thermal printers, facsimile uses ink-jet, electro-static and electro-sensitive printing.

Perhaps the acknowledgement that facsimile is becoming more important was marked by the publication for the first time of a facsimile directory by British Telecom.

Elaine Williams

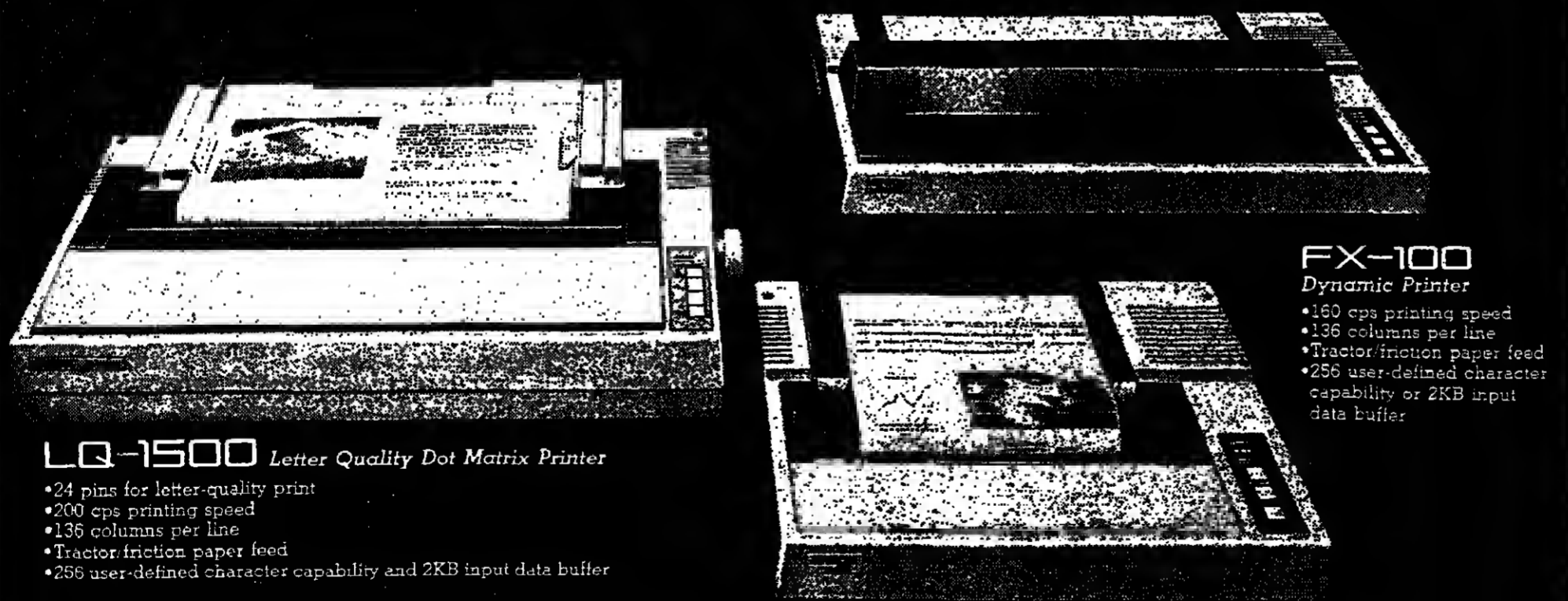


EPSON

# Natural Selection

Epson printers are the logical choice for computer users who demand top quality performance. Because Epson dot matrix printers produce superior copy legibility at high speeds. And advanced features ensure reliable operation for every business environment.

The Epson name has long stood for quality dot matrix printers. That's why smart businessmen concerned with superb cost performance look to Epson first.



**LQ-1500 Letter Quality Dot Matrix Printer**

- 24 pins for letter-quality print
- 200 cps printing speed
- 136 columns per line
- Tractor/friction paper feed
- 256 user-defined character capability and 2KB input data buffer

**FX-100 Dynamic Printer**

- 160 cps printing speed
- 136 columns per line
- Tractor/friction paper feed
- 256 user-defined character capability or 2KB input data buffer

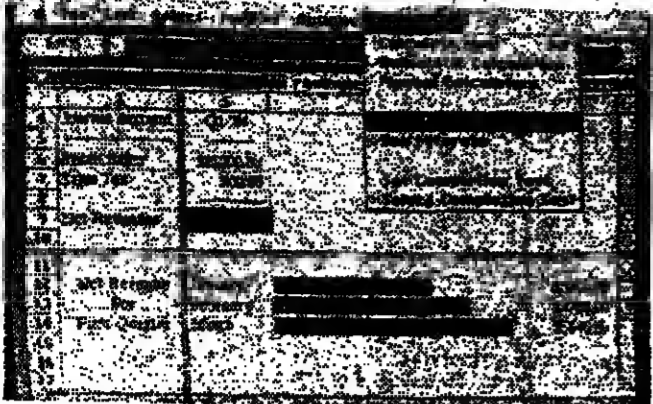
**FX-80 Versatile Printer**

- 160 cps printing speed
- 80 columns per line
- Tractor/friction paper feed
- 256 user-defined character capability or 2KB input data buffer

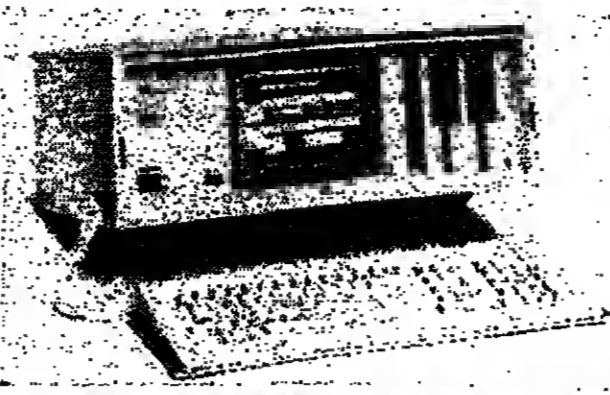
EPSON CORPORATION Head Office: 6-10 Hirooka, Shinjuku-ku, Nishi-Shinjuku, Tokyo 163, Japan. Phone: (03) 535-2222. Telex: 3198 EPSON JAPAN  
 EPSON DEUTSCHLAND GmbH Postfach 24, 4000 Düsseldorf 1, F.R. Germany. Phone: (0211) 99-11. Telex: 3198 EPSON  
 EPSON (UK) LTD. Corporate House, 388 High Road, Woking, Middlesex, HA2 9PU, U.K. Phone: (041) 844-111. Telex: 3198 EPSON  
 EPSON FRANCE S.A. 174, rue Maras Aubin, 92000, Courcouronnes, France. Phone: (1) 39 27 27. Telex: 3198 EPSON



THE DESK-TOP REVOLUTION 7



Above: example of the Microsoft Multiplan for Apple Macintosh. All spreadsheet and financial planning products cite ease-of-use as a key factor. Centre: Sir David Fraser, Microsoft's general manager



Graphics play an increasing part in making software more accessible. Graphs and charts can be made in minutes with the new Graphix Dabplot Plus program on Philips portable P2040C computer, above.

Philip Manchester on micro-mainframe links

A need for the network

THE PERSONAL computer has opened up a number of possibilities for applying computing to office work. Small computers with software packages to do word processing, filing and calculating bring unprecedented power to the desk top.

But is a personal computer in isolation as useful as it could be? Separated from the corporate information flow, its use is limited to those tasks that are entirely personal with no prospect of fully utilising its powers to the full. The latest message that is being spread by hardware and software suppliers of all shapes and sizes is that personal computers should be plugged in to the corporate network.

In this way they can take advantage of other applications including electronic mail and access to corporate data. Furthermore, the extra power that large corporate mainframe computers offer, can be used to perform tasks that would be unthinkable on the much smaller and less powerful micro. In effect, the personal computer can be turned into a formidable terminal realising the promise of so-called distributed processing.

A number of different approaches to the problem of hooking the personal computer to the mainframe are being tried. IBM, for example, is working towards incorporating the personal computer into its overall strategy for setting up distributed computing. Even when the IBM PC was first announced it included features that let it appear like a standard IBM terminal — the 3270. Since then further announcements of both software and hardware have extended these features.

Last autumn saw announcements in the U.S. that can make the IBM PC/XT the larger IBM micro, look as though it is a remote part of a large mainframe. This was a particularly significant move by IBM because it meant that programs built for the main frame could be sent down communications lines to the personal computer.

In effect it means that the same program can run on all of IBM's mainstream machines from the very smallest (the PC/XT) to the very largest. Where IBM leads, others inevitably follow and the group of large software houses surrounding IBM, the independent software suppliers, have all

brought out products that take advantage of this link between micro and mainframe. Other software companies have adopted a more general approach. A new breed of software product called a protocol emulator has been growing in popularity over the past couple of years.

Communications between computers are controlled using what are called communications protocols and a number of these are approved as international standards. Others, such as the one governing the IBM 3270 terminal have become "de facto" industry standards.

The emulator program sits inside a microcomputer and pretends that it is one of these standard terminals. The ACT Sirius has been a popular choice as a vehicle for this sort of product and enables a Sirius user to link up with mainframes from a number of manufacturers.

A typical scenario would be for a number of managers to abstract budgeting information from the mainframe database, pull it down the communications link to their personal computers, process it using a spreadsheet and send it back to the mainframe. Senior management could then take the consolidated budget information and go through the same process to arrive at an overall budget.

A number of companies have produced products of this type. VISA Computer Services of Leeds and Network Designers of Oxford have emulators that can talk to ICL mainframes. Software Components specialises in 3270 emulation and Xerox Computing and Zenith Plan both provide products to emulate the Digital Equipment (DEC) VT100 terminal. MicroProducts Software includes a mainframe link in its operating system software EOS and the firm's marketing manager has strong views on the importance of linking personal computers to the corporate database.

"Users do not want to spend hours keying in data to spreadsheet programs when they can get it from an existing database," notes Neil Flynn of MPSL. "The mainframe link is very important."

The idea of abstracting data from mainframe databases for personal use is an important part of the networking strategies of the major manufacturers.

IBM has laid the ground for this with its recent announcements in the database area. For some time it has been working on a simpler approach to database with its so called "relational" database system culminating in the launch of a product called SQL. The relational approach views data as if it were a series of two dimensional tables — such the same as the standard spreadsheet or Visicalc form. Instead of a rigid structure being applied to data according to how it has been organised in the computer, it allows the user a high degree of freedom.

At a more esoteric level, the linking of personal computers to mainframes also opens the door to electronic mail and what is being called the electronic diary.

The electronic diary enables meetings and conferences to be set up through the network without the usual deluge of phone calls. Each manager keeps a diary on his or her personal computer that may be viewed by other managers so that meetings can be arranged to everyone's convenience.

How this will work in practice and how it will change people's methods of working remains to be seen.

But there can be no doubt that the micro mainframe link will be the "glue" that keeps the networked corporation of the future together.

A proliferation of spreadsheet packages reveals the most important need for many years

Getting a grip on financial planning

MORE THAN 70 per cent of the IBM Personal Computers already sold have been bought to run one program, a spreadsheet called Lotus 1-2-3. This is not just an indication that the software suppliers are in firm control of the market these days. It also means there are a lot of people out there running spreadsheet packages because they really need to do so.

Lotus has become the star, through shrewd marketing and timing, but there are so many others that charting them all is impossible. Comshare offers an entire range of financial systems, Microsoft's Multiplan is doing well, and any software directory will yield a score of other well-known names.

with his computer, to include other office functions. But it appears that they are more ready for the users than the users are ready for them.

The ideal picture painted by suppliers, such as Peachtree and Microsoft, is one where all office software comes from one supplier, who peddles word processing, budget programs, payroll, or accounting as well as the all-important spreadsheet.

Certainly, office software is available, along with diaries, mail, time management and all the extras—London software house Graffcom has just released one such suite.

But there is little proof that executives are anxious to get to grips with word processing, though it is invaluable in its place (i.e. the secretary's desk, not the executive's). It is still easier to call in the secretary and dictate a letter.

For spreadsheets apart, executives are wary of the keyboard. Numbers may be as easy as 1, 2, 3, but it takes a long time to find a, b, c if not acquainted with the vagaries of the QWERTY keyboard.

If finding the right keys to press takes concentration, what hope is there of getting to grips with the input needed to run an application, and even more daunting, the cryptic commands used by most operating systems.

Even the gimmicks, such as the "mouse" pointer, which moves a cursor on the screen using a remote joystick, and

the touch-screen systems go only part of the way. There is no getting away from the keyboard when developing new applications and entering data, though it might be easy to run them at the mere cost of an aching arm and a grubby screen.

Graphics have been playing an increasing part in making software more accessible, and are now often incorporated into financial planning tools.

Creeping up behind spreadsheets and word processing in popularity is the database. People are increasingly concerned with sharing the same data, to avoid duplicating the effort of constantly entering data from one system onto another.

The database is a technique taken straight from the "adult" data processing world. To use a database effectively a user must have a firm grip on dp principles and terminology.

How many executives want to know what a field is, or have the time to learn?

They are much more likely to abandon the whole complex process to the experienced programmer, and stick to the piles of paper. (Not that computers produce a paperless office in any case—you just have less room for it all on the desk.)

Best-known among the micro databases is Ashton Tate's dBase II, definitely not a novice tool.

Rivals have improved functions, power, and user-interface in an attempt to overtake dBase II. They include Condor, supplied by MOM of Aberdeen, the Sensible Solution from O'Han-

lon, FMS-80, and various British contenders such as Comsoft's DMS, Microcomputer Business Systems' Rescue, and Southdata's Superfile.

These systems verge upon "applications generators": systems which can produce programs to the users' own specifications without expecting them to code.

They do, however, have to know how to analyse their business requirements in computer terms, enough to daunt the most determined novice.

The increase of "integrated" office systems is linked with the advent of more sophisticated operating environments.

Again, these give more power but demand more knowledge, and it's knowledge the average executive can't be bothered to acquire. A Microsoft spokesman summed it up like this:

"The industry has deluded itself in the transition between micro and main. The end-user has got used to dedicated systems like word processing, but now that one machine can do many jobs, it's taking a while for people to catch up. Machine capabilities are way beyond user capabilities, and testing these systems means extensive training."

Mr Paul Bailey, of Microsoft's opposite number, Digital Research, shares the suspicion that the industry is ahead of its users—and even itself—"there's an enormous culture gap," he says. "Basically, all these things take some time to learn to use. And the computer industry is very laggard about using its own technology."

It is very noticeable that advertisements grasp on financial planning as the most "visible" area of personal computing. One of the reasons for this is the quick turnaround offered by having a micro on the desk, instead of waiting days for the answer from the mainframe. Another reason is the change of emphasis in traditional accounting towards examining cash-flow.

Information and decisions are needed at speed, and it becomes vital to optimise by playing with various possibilities and judging their effect on the financial model.

The transition of the micro-computer from the hobbyist into the business environment had a lot to do with the Visicalc spreadsheet, one of the earlier and most successful micro applications.

So the spreadsheet history is strong, and the developers have had a long time to get close to their users and find out what they want. They start with an advantage.

By Claire Gooding

The people using them are likely to be more than familiar with the concepts used by the programs, and also proficient in using a numeric keypad.

All the spreadsheet and financial planning products cite ease of use as a prime factor. Lotus deserves its popularity, if only for the effort its developers put into making the minimum of keystrokes work to the maximum effect.

In effect, the spreadsheet has been the foot in the door for other applications. At the moment it appears to be the only application taken seriously, demoting the micro-computer from the all-purpose companion into a glorified—albeit remarkably clever—programmable desk calculator.

The software suppliers are ready and willing to extend the executive user's relationship

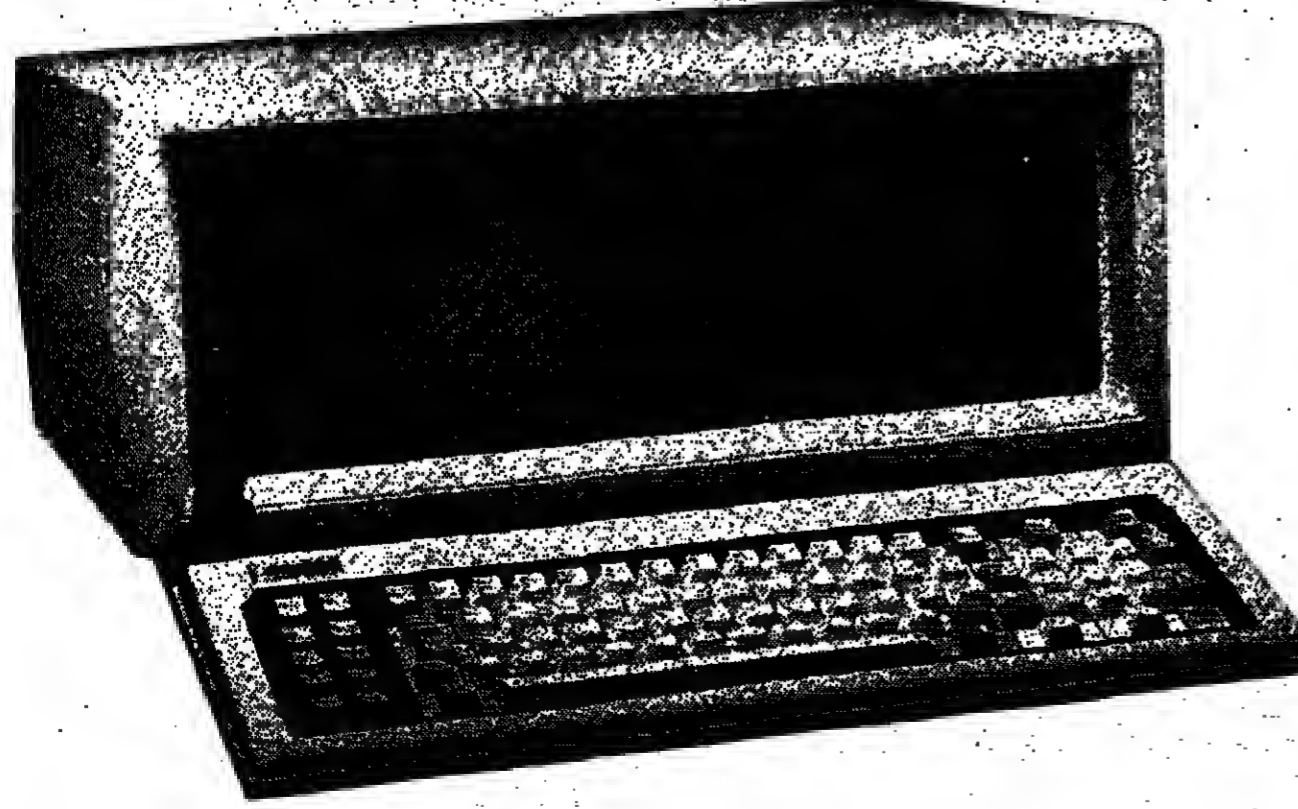
# You and the Compaq could go far!

The Compaq runs all the popular programs written for the IBM Personal Computer and works with the same printers and other peripherals. There's really only one big difference. The Compaq Computer is designed to travel.

Carry the Compaq Computer from office to office. Carry it home at the weekend. Or take it on business trips. If your company already uses the IBM PC, add the Compaq Portable as a mobile unit that can use the same programs, the same data disks, and even the same user manuals. With most other portables you'd probably need to buy an additional display

screen because the built-in screen is too small for certain tasks, like word processing, but not with the Compaq. The Compaq Computer is the first uncompromising portable computer. It delivers all the advantages of portability without trading off any computing power capability. After all, the first truly portable computer which is also totally compatible with the IBM PC must be destined for great heights. Already a proven winner in the USA, it is now available to you from the UK's premier vendor of micro computers — PCL.

Lotus 1-2-3 — the great What If? Add to your Compaq Lotus 1-2-3 and you have the most remarkable hardware/software combination yet produced for financial management. It contains spreadsheet, information management, and graphics all in one package. Use this software either on your existing IBM PC's or on a new Compaq and you will transform the financial thinking of your organisation. The answer to What If? is as easy as 1-2-3.



Planning Consultancy Lead with Compaq

At PCL we not only supply hardware but software and training too. We lead you through every step from planning and purchasing to operator training. We take just as much interest in your needs after we have sold you a personal computer as before. We are innovators and are constantly providing products and services to meet the demands of corporate end users.

Planning Consultancy Limited  
46/47 Pall Mall London SW1Y 5JG  
Telephone: 01 839 8890

Please send me further details of:  
 Lotus 1-2-3  
 Name  
 Position  
 Company  
 Address  
 Telephone

Lotus 1-2-3 is a registered trademark of Lotus Development Corporation. IBM PC is a registered trademark of International Business Machines Corporation. COMPAQ is a trademark of COMPAQ Computer Corporation.



# THE DESK-TOP REVOLUTION 8

**They all chose their computer systems for different reasons**



**They all chose DPCE computer maintenance for the same reason**

Because it's the logical maintenance strategy for today's computer installations. We take on total maintenance responsibility for complete computer installations, regardless of the make or mixture of hardware. That means one maintenance team on site. One telephone number. One invoice. And significant overall cost savings. DPCE engineering teams provide totally professional and reliable maintenance of hardware from over 150 manufacturers. From the most powerful mainframe computers to distributed terminal networks.

**DPCE**  
DPCE (UK) Limited  
The independent computer maintenance company

That's why more and more leading UK organisations have entrusted their computer installations to DPCE's safe and competent hands. Are you missing out on the benefits of DPCE independent computer maintenance?

I would like to find out more about DPCE independent computer maintenance.

Please send me a copy of your brochures and customer list

Please ask your Sales manager to contact me

Name \_\_\_\_\_

Title \_\_\_\_\_

Organisation \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Send to: DPCE UK Ltd, 26-28 Market Place, Wokingham, Berks. FT16/4

## EXTEL 'EXAMINER' FACILITY

### New computer-based financial service

THE FIRST commercial installation of the Extel Examiner, a newly developed computer-based business and financial information service available from the financial services division of the Exchange Telegraph company, is in operation at The Flying Club, British Midland Airways' new lounge at London's Heathrow Airport. Examiner provides City, UK and international financial news in visual display form as it happens continuously throughout the day, using a 16-key pad which is similar to the remote control pad of a domestic television set. Based on the Extel financial news service, the three main features are: 1. Investigation—where up to 400 items of stored information can be quickly

searched for and retrieved (this represents news of the previous 11 to 23 days). A headline newflash is featured at the bottom of every page precluding the possibility of missing a vital current news item when recalling previous information. 2. Broadcast—where all the latest news can be viewed without the need to take any special action such as pressing buttons. 3. Dynamic Index—where an index of news items is built up as stories are received. Share prices are not screened continuously by Examiner but are covered via a report such as the hourly Stock Exchange market reports. Share prices are, however, available on Extel's Priceline service.



"Examiner" installed at London's Heathrow airport

Examiner, which can be supplied to all parts of the UK, is one of the most economical financial information services available where multiple terminals are required. Subscription to the service includes communications and maintenance costs. The new service is expected to prove of marked benefit to a wide range of businessmen and investors, including brokers, jobbers, investors, fund managers, company directors and the media.

### Developments in local area networks

# A crucial period ahead

LATE LAST year there was a flurry of publishing activity from IBM about a facet of office automation where it had been notoriously non-committal—local area networking, the art of linking all the electronic devices which constitute the office of the future in a cheap and effective manner.

Local area networks, or LANs, are the glue which holds the electronic office together, yet IBM refused to give any clue to the kind of system that should become standard.

Then its scientific review, IBM Research Highlights, devoted an issue to an article entitled "IBM Zurich—Local Area Network (LAN) Prototype." At the same time it published a "Technical Overview of a Token-Ring Local Area Network."

Then the IBM Journal of Research and Development featured, on the cover of its September issue an article to highlight an article entitled: "A Local Communications Network Based on Interconnected Token-Access Rings: A Tutorial." Well, when "Big Blue" gives tutorials it behoves the rest of the world to take note. So far there have been no formal announcements, but coupled with the rash of personal computer based products for the office IBM has announced in the past few months, it cannot be long before it announces a local area network—and it is likely to be of a token-passing ring structure.

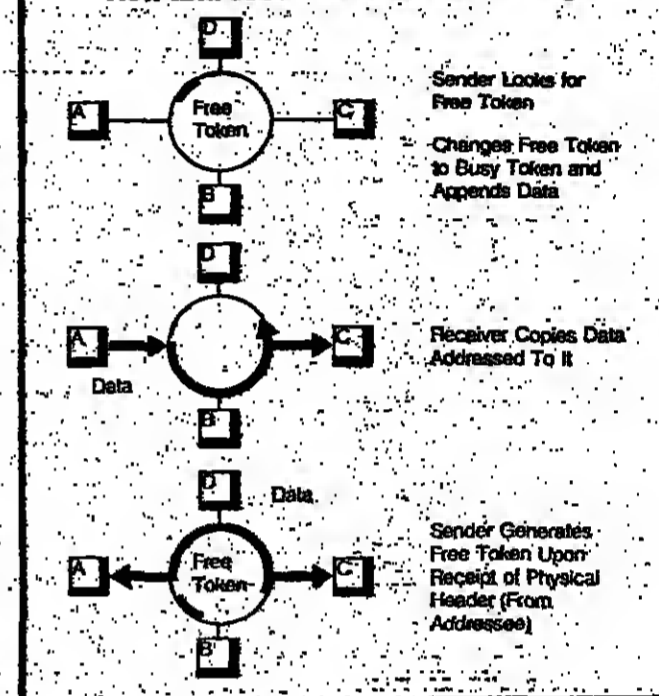
Why are LANs important? There are three principal reasons: 1. First, the method used for connecting together, say, a network of personal computers or they can pass information one to another has got to be inexpensive in relation to the cost of the computers. If a personal computer functioning as an executive workstation costs, say \$3,000, an office manager would think twice before paying a further \$1,500 per station to attach them to a LAN. 2. Second, they must function reliably at high speed. There would be no advantage in transferring files between office workstations or in feeding files to a printer if they travelled slower than the (manual) internal mail or if the level of errors was unacceptably high. 3. Third, the physical method of connection—the actual wiring—must be compatible with the fabric of the building in which it is being laid.

The Orlin study published last year, showed that most, if not all existing office buildings are poorly suited to take all the electronic gadgetry and wiring that the office of the future demands. LANs computers are connected to their terminals by flat ribbon cables of considerable bulk and of a specified length. Popular One of the most popular methods of building LANs involves coaxial cabling—a solid copper core wrapped round with copper insulation. Again, this is bulky, inflexible stuff, difficult to weave into the fabric of new buildings, with proper ducting virtually impossible to fit into older buildings without causing substantial disruption.

In the short-term, a number of companies have developed LANs based on existing telephone wiring. Computer and Systems Engineering and Micromator, both in the UK, have developed networking systems which allow both voice and data to be transmitted along the wires to the telephone handset. Neither as powerful, nor as comprehensive as major LAN systems, these provide a low-cost and effective solution for many users.

So how can a LAN be defined? According to Dennis Campbell and Michael Shain in the Microcomputer Users Handbook 1984 (Macmillan Reference and Paperbacks) a LAN is a: "High speed communications system operating over a relatively small geographic area with between 100m and 10 km of cabling." "Data is transferred at speeds of one million bits (individual data units) a second

#### How IBM sees local area networking



BY ALAN CANE

upwards with a single LAN interconnecting as many as 100 or more computer systems.

Coupled with this high data rate is a very low error rate, typically equivalent to one incorrect bit in one thousand million bits of transferred data.

This definition is pretty comprehensive: what options are available to the customer? One of the simplest implementations of a successful LAN was Ethernet, developed as were so many of the basic concepts of the electronic office by the Xerox Corporation Palo Alto research group.

Ethernet is described as "baseband" the stream of bits constituting the message in transit is not modulated. The comparison here is with "broadband" where frequency modulation techniques are used—for example, Wangnet. The advantage of broadband LAN technology is that a number of different messages representing data, voice and video pictures can be carried through the network simultaneously.

#### Control

The next question is control of access to the network: what sort of "policeman" should be employed to ensure that only one workstation can send messages at one time and that messages do not crash into one another. Ethernet uses an important technique called Carrier Sense Multiple Access with Collision Detection (CSMA/CD) in which each workstation "listens" to see if there is activity on the network. If there is, they stay silent; if not they are allowed to transmit. If two messages

collide, both transmitting stations stay silent for an arbitrary period before trying again; by the laws of chance, one station will eventually control the network.

Other systems include central computer control or token passing where messages holding a "token" have right of way on the system. Structurally, the network can be a "bus", a single channel to which the workstations are attached, a star where each workstation is attached centrally to a central control point or a ring where the message travels from one workstation to the next in sequence being regenerated at each node.

So far, Xerox's view of the LAN's share of the publicity has tended to take the lion's share of the publicity chiefly because of its early start and because many other companies were prepared to license the technology from it. Indeed, Digital Equipment Corporation (DEC) and Intel, the microchip manufacturer, are partners with Xerox in developing the system. The entry of IBM into the LAN business will inevitably upset the balance so it is worth looking in some detail at what its Zurich research group has put forward. It is proposing a baseband system in which access control is achieved by passing a "token" around a ring. Each station has an adaptor that detects the signals generated by the preceding station, captures them and regenerates the data before transmitting them to the next station—a fast and effective method of detecting and isolating errors. IBM argues that the ring structure is well suited to optical fibre cabling—which, being thinner and less rigid than copper, offers advantages in wiring awkward offices. It claims advantages for token passing in the elimination of central control while enabling the designer to predict the average and worst case performance of the ring. Baseband systems, it says, offer the greatest potential for lower cost. LANs have moved quickly from laboratory curiosity to commercial electronic glue. The next few months should determine who is going to set the pace for the future.

# E.P. phone home.



Incredible though it may seem, the Brother EP-44 actually sends messages through space. With the help of the humble telephone. Primarily it's an advanced portable electronic 16 c.p.s. writer. But the Brother EP-44 has one function alien to its kind. Link it to a phone via an acoustic coupler and it will send your typewritten message to a similarly linked printer or EP-44 anywhere in the world. By way of satellite, land line, or cable. A personalised telex, no less. Enabling you to type in Bradford, on paper in Bangkok. However, the EP-44 isn't confined to extra-terrestrial activities. It is an indispensable asset for anyone who communicates by the written word. Inter-city or inter-office. What's more, the EP-44 will readily issue a variety of commands. Connect your home computer to

its RS-232C interface and it will reel off your computer command lists as you simultaneously type them on screen. (Thankfully they'll be printed on presentable A4 sheets—not 'bus ticket' type rolls). And so, to the EP-44's most important addition of all. The typist. Who will find a multitude of functions at his or her disposal on this astonishing little machine. An LCD panel (enabling you to correct up to 15 characters typed before they even hit the paper). A full function 4K memory with text scroll viewing and editing facilities. A 24 x 18 dot matrix head for an exceptionally improved character reproduction.

International keyboard, automatic right margin flush, underlining, centring, carrier return and, you'll be reassured to know, an 'old fashioned' QWERTY keyboard. All contained within a space of 13" x 10.3" x 2.2". About the dimensions of an average telephone directory. But perhaps the most amazing thing about the EP-44 is its starting price—an astonishing £249.95 (inc VAT). Too good to be true?

Please send me more details of the Brother EP-44.

Name \_\_\_\_\_

Address \_\_\_\_\_



Fast becoming the biggest name in typewriters.

SEND YOURS TO: DEPARTMENT 11, BROTHERS OFFICE EQUIPMENT DIVISION, 37/38, BROTHERS SHELFY STREET, GURDURIDGE, ALDERSHOT (HANTS) GU11 1LH. TEL: 01256 33011 (3 LINES) 33012 (3 LINES) 33013 (3 LINES) 33014 (3 LINES) 33015 (3 LINES) 33016 (3 LINES) 33017 (3 LINES) 33018 (3 LINES) 33019 (3 LINES) 33020 (3 LINES) 33021 (3 LINES) 33022 (3 LINES) 33023 (3 LINES) 33024 (3 LINES) 33025 (3 LINES) 33026 (3 LINES) 33027 (3 LINES) 33028 (3 LINES) 33029 (3 LINES) 33030 (3 LINES) 33031 (3 LINES) 33032 (3 LINES) 33033 (3 LINES) 33034 (3 LINES) 33035 (3 LINES) 33036 (3 LINES) 33037 (3 LINES) 33038 (3 LINES) 33039 (3 LINES) 33040 (3 LINES) 33041 (3 LINES) 33042 (3 LINES) 33043 (3 LINES) 33044 (3 LINES) 33045 (3 LINES) 33046 (3 LINES) 33047 (3 LINES) 33048 (3 LINES) 33049 (3 LINES) 33050 (3 LINES) 33051 (3 LINES) 33052 (3 LINES) 33053 (3 LINES) 33054 (3 LINES) 33055 (3 LINES) 33056 (3 LINES) 33057 (3 LINES) 33058 (3 LINES) 33059 (3 LINES) 33060 (3 LINES) 33061 (3 LINES) 33062 (3 LINES) 33063 (3 LINES) 33064 (3 LINES) 33065 (3 LINES) 33066 (3 LINES) 33067 (3 LINES) 33068 (3 LINES) 33069 (3 LINES) 33070 (3 LINES) 33071 (3 LINES) 33072 (3 LINES) 33073 (3 LINES) 33074 (3 LINES) 33075 (3 LINES) 33076 (3 LINES) 33077 (3 LINES) 33078 (3 LINES) 33079 (3 LINES) 33080 (3 LINES) 33081 (3 LINES) 33082 (3 LINES) 33083 (3 LINES) 33084 (3 LINES) 33085 (3 LINES) 33086 (3 LINES) 33087 (3 LINES) 33088 (3 LINES) 33089 (3 LINES) 33090 (3 LINES) 33091 (3 LINES) 33092 (3 LINES) 33093 (3 LINES) 33094 (3 LINES) 33095 (3 LINES) 33096 (3 LINES) 33097 (3 LINES) 33098 (3 LINES) 33099 (3 LINES) 33100 (3 LINES) 33101 (3 LINES) 33102 (3 LINES) 33103 (3 LINES) 33104 (3 LINES) 33105 (3 LINES) 33106 (3 LINES) 33107 (3 LINES) 33108 (3 LINES) 33109 (3 LINES) 33110 (3 LINES) 33111 (3 LINES) 33112 (3 LINES) 33113 (3 LINES) 33114 (3 LINES) 33115 (3 LINES) 33116 (3 LINES) 33117 (3 LINES) 33118 (3 LINES) 33119 (3 LINES) 33120 (3 LINES) 33121 (3 LINES) 33122 (3 LINES) 33123 (3 LINES) 33124 (3 LINES) 33125 (3 LINES) 33126 (3 LINES) 33127 (3 LINES) 33128 (3 LINES) 33129 (3 LINES) 33130 (3 LINES) 33131 (3 LINES) 33132 (3 LINES) 33133 (3 LINES) 33134 (3 LINES) 33135 (3 LINES) 33136 (3 LINES) 33137 (3 LINES) 33138 (3 LINES) 33139 (3 LINES) 33140 (3 LINES) 33141 (3 LINES) 33142 (3 LINES) 33143 (3 LINES) 33144 (3 LINES) 33145 (3 LINES) 33146 (3 LINES) 33147 (3 LINES) 33148 (3 LINES) 33149 (3 LINES) 33150 (3 LINES) 33151 (3 LINES) 33152 (3 LINES) 33153 (3 LINES) 33154 (3 LINES) 33155 (3 LINES) 33156 (3 LINES) 33157 (3 LINES) 33158 (3 LINES) 33159 (3 LINES) 33160 (3 LINES) 33161 (3 LINES) 33162 (3 LINES) 33163 (3 LINES) 33164 (3 LINES) 33165 (3 LINES) 33166 (3 LINES) 33167 (3 LINES) 33168 (3 LINES) 33169 (3 LINES) 33170 (3 LINES) 33171 (3 LINES) 33172 (3 LINES) 33173 (3 LINES) 33174 (3 LINES) 33175 (3 LINES) 33176 (3 LINES) 33177 (3 LINES) 33178 (3 LINES) 33179 (3 LINES) 33180 (3 LINES) 33181 (3 LINES) 33182 (3 LINES) 33183 (3 LINES) 33184 (3 LINES) 33185 (3 LINES) 33186 (3 LINES) 33187 (3 LINES) 33188 (3 LINES) 33189 (3 LINES) 33190 (3 LINES) 33191 (3 LINES) 33192 (3 LINES) 33193 (3 LINES) 33194 (3 LINES) 33195 (3 LINES) 33196 (3 LINES) 33197 (3 LINES) 33198 (3 LINES) 33199 (3 LINES) 33200 (3 LINES) 33201 (3 LINES) 33202 (3 LINES) 33203 (3 LINES) 33204 (3 LINES) 33205 (3 LINES) 33206 (3 LINES) 33207 (3 LINES) 33208 (3 LINES) 33209 (3 LINES) 33210 (3 LINES) 33211 (3 LINES) 33212 (3 LINES) 33213 (3 LINES) 33214 (3 LINES) 33215 (3 LINES) 33216 (3 LINES) 33217 (3 LINES) 33218 (3 LINES) 33219 (3 LINES) 33220 (3 LINES) 33221 (3 LINES) 33222 (3 LINES) 33223 (3 LINES) 33224 (3 LINES) 33225 (3 LINES) 33226 (3 LINES) 33227 (3 LINES) 33228 (3 LINES) 33229 (3 LINES) 33230 (3 LINES) 33231 (3 LINES) 33232 (3 LINES) 33233 (3 LINES) 33234 (3 LINES) 33235 (3 LINES) 33236 (3 LINES) 33237 (3 LINES) 33238 (3 LINES) 33239 (3 LINES) 33240 (3 LINES) 33241 (3 LINES) 33242 (3 LINES) 33243 (3 LINES) 33244 (3 LINES) 33245 (3 LINES) 33246 (3 LINES) 33247 (3 LINES) 33248 (3 LINES) 33249 (3 LINES) 33250 (3 LINES) 33251 (3 LINES) 33252 (3 LINES) 33253 (3 LINES) 33254 (3 LINES) 33255 (3 LINES) 33256 (3 LINES) 33257 (3 LINES) 33258 (3 LINES) 33259 (3 LINES) 33260 (3 LINES) 33261 (3 LINES) 33262 (3 LINES) 33263 (3 LINES) 33264 (3 LINES) 33265 (3 LINES) 33266 (3 LINES) 33267 (3 LINES) 33268 (3 LINES) 33269 (3 LINES) 33270 (3 LINES) 33271 (3 LINES) 33272 (3 LINES) 33273 (3 LINES) 33274 (3 LINES) 33275 (3 LINES) 33276 (3 LINES) 33277 (3 LINES) 33278 (3 LINES) 33279 (3 LINES) 33280 (3 LINES) 33281 (3 LINES) 33282 (3 LINES) 33283 (3 LINES) 33284 (3 LINES) 33285 (3 LINES) 33286 (3 LINES) 33287 (3 LINES) 33288 (3 LINES) 33289 (3 LINES) 33290 (3 LINES) 33291 (3 LINES) 33292 (3 LINES) 33293 (3 LINES) 33294 (3 LINES) 33295 (3 LINES) 33296 (3 LINES) 33297 (3 LINES) 33298 (3 LINES) 33299 (3 LINES) 33300 (3 LINES) 33301 (3 LINES) 33302 (3 LINES) 33303 (3 LINES) 33304 (3 LINES) 33305 (3 LINES) 33306 (3 LINES) 33307 (3 LINES) 33308 (3 LINES) 33309 (3 LINES) 33310 (3 LINES) 33311 (3 LINES) 33312 (3 LINES) 33313 (3 LINES) 33314 (3 LINES) 33315 (3 LINES) 33316 (3 LINES) 33317 (3 LINES) 33318 (3 LINES) 33319 (3 LINES) 33320 (3 LINES) 33321 (3 LINES) 33322 (3 LINES) 33323 (3 LINES) 33324 (3 LINES) 33325 (3 LINES) 33326 (3 LINES) 33327 (3 LINES) 33328 (3 LINES) 33329 (3 LINES) 33330 (3 LINES) 33331 (3 LINES) 33332 (3 LINES) 33333 (3 LINES) 33334 (3 LINES) 33335 (3 LINES) 33336 (3 LINES) 33337 (3 LINES) 33338 (3 LINES) 33339 (3 LINES) 33340 (3 LINES) 33341 (3 LINES) 33342 (3 LINES) 33343 (3 LINES) 33344 (3 LINES) 33345 (3 LINES) 33346 (3 LINES) 33347 (3 LINES) 33348 (3 LINES) 33349 (3 LINES) 33350 (3 LINES) 33351 (3 LINES) 33352 (3 LINES) 33353 (3 LINES) 33354 (3 LINES) 33355 (3 LINES) 33356 (3 LINES) 33357 (3 LINES) 33358 (3 LINES) 33359 (3 LINES) 33360 (3 LINES) 33361 (3 LINES) 33362 (3 LINES) 33363 (3 LINES) 33364 (3 LINES) 33365 (3 LINES) 33366 (3 LINES) 33367 (3 LINES) 33368 (3 LINES) 33369 (3 LINES) 33370 (3 LINES) 33371 (3 LINES) 33372 (3 LINES) 33373 (3 LINES) 33374 (3 LINES) 33375 (3 LINES) 33376 (3 LINES) 33377 (3 LINES) 33378 (3 LINES) 33379 (3 LINES) 33380 (3 LINES) 33381 (3 LINES) 33382 (3 LINES) 33383 (3 LINES) 33384 (3 LINES) 33385 (3 LINES) 33386 (3 LINES) 33387 (3 LINES) 33388 (3 LINES) 33389 (3 LINES) 33390 (3 LINES) 33391 (3 LINES) 33392 (3 LINES) 33393 (3 LINES) 33394 (3 LINES) 33395 (3 LINES) 33396 (3 LINES) 33397 (3 LINES) 33398 (3 LINES) 33399 (3 LINES) 33400 (3 LINES) 33401 (3 LINES) 33402 (3 LINES) 33403 (3 LINES) 33404 (3 LINES) 33405 (3 LINES) 33406 (3 LINES) 33407 (3 LINES) 33408 (3 LINES) 33409 (3 LINES) 33410 (3 LINES) 33411 (3 LINES) 33412 (3 LINES) 33413 (3 LINES) 33414 (3 LINES) 33415 (3 LINES) 33416 (3 LINES) 33417 (3 LINES) 33418 (3 LINES) 33419 (3 LINES) 33420 (3 LINES) 33421 (3 LINES) 33422 (3 LINES) 33423 (3 LINES) 33424 (3 LINES) 33425 (3 LINES) 33426 (3 LINES) 33427 (3 LINES) 33428 (3 LINES) 33429 (3 LINES) 33430 (3 LINES) 33431 (3 LINES) 33432 (3 LINES) 33433 (3 LINES) 33434 (3 LINES) 33435 (3 LINES) 33436 (3 LINES) 33437 (3 LINES) 33438 (3 LINES) 33439 (3 LINES) 33440 (3 LINES) 33441 (3 LINES) 33442 (3 LINES) 33443 (3 LINES) 33444 (3 LINES) 33445 (3 LINES) 33446 (3 LINES) 33447 (3 LINES) 33448 (3 LINES) 33449 (3 LINES) 33450 (3 LINES) 33451 (3 LINES) 33452 (3 LINES) 33453 (3 LINES) 33454 (3 LINES) 33455 (3 LINES) 33456 (3 LINES) 33457 (3 LINES) 33458 (3 LINES) 33459 (3 LINES) 33460 (3 LINES) 33461 (3 LINES) 33462 (3 LINES) 33463 (3 LINES) 33464 (3 LINES) 33465 (3 LINES) 33466 (3 LINES) 33467 (3 LINES) 33468 (3 LINES) 33469 (3 LINES) 33470 (3 LINES) 33471 (3 LINES) 33472 (3 LINES) 33473 (3 LINES) 33474 (3 LINES) 33475 (3 LINES) 33476 (3 LINES) 33477 (3 LINES) 33478 (3 LINES) 33479 (3 LINES) 33480 (3 LINES) 33481 (3 LINES) 33482 (3 LINES) 33483 (3 LINES) 33484 (3 LINES) 33485 (3 LINES) 33486 (3 LINES) 33487 (3 LINES) 33488 (3 LINES) 33489 (3 LINES) 33490 (3 LINES) 33491 (3 LINES) 33492 (3 LINES) 33493 (3 LINES) 33494 (3 LINES) 33495 (3 LINES) 33496 (3 LINES) 33497 (3 LINES) 33498 (3 LINES) 33499 (3 LINES) 33500 (3 LINES) 33501 (3 LINES) 33502 (3 LINES) 33503 (3 LINES) 33504 (3 LINES) 33505 (3 LINES) 33506 (3 LINES) 33507 (3 LINES) 33508 (3 LINES) 33509 (3 LINES) 33510 (3 LINES) 33511 (3 LINES) 33512 (3 LINES) 33513 (3 LINES) 33514 (3 LINES) 33515 (3 LINES) 33516 (3 LINES) 33517 (3 LINES) 33518 (3 LINES) 33519 (3 LINES) 33520 (3 LINES) 33521 (3 LINES) 33522 (3 LINES) 33523 (3 LINES) 33524 (3 LINES) 33525 (3 LINES) 33526 (3 LINES) 33527 (3 LINES) 33528 (3 LINES) 33529 (3 LINES) 33530 (3 LINES) 33531 (3 LINES) 33532 (3 LINES) 33533 (3 LINES) 33534 (3 LINES) 33535 (3 LINES) 33536 (3 LINES) 33537 (3 LINES) 33538 (3 LINES) 33539 (3 LINES) 33540 (3 LINES) 33541 (3 LINES) 33542 (3 LINES) 33543 (3 LINES) 33544 (3 LINES) 33545 (3 LINES) 33546 (3 LINES) 33547 (3 LINES) 33548 (3 LINES) 33549 (3 LINES) 33550 (3 LINES) 33551 (3 LINES) 33552 (3 LINES) 33553 (3 LINES) 33554 (3 LINES) 33555 (3 LINES) 33556 (3 LINES) 33557 (3 LINES) 33558 (3 LINES) 33559 (3 LINES) 33560 (3 LINES) 33561 (3 LINES) 33562 (3 LINES) 33563 (3 LINES) 33564 (3 LINES) 33565 (3 LINES) 33566 (3 LINES) 33567 (3 LINES) 33568 (3 LINES) 33569 (3 LINES) 33570 (3 LINES) 33571 (3 LINES) 33572 (3 LINES) 33573 (3 LINES) 33574 (3 LINES) 33575 (3 LINES) 33576 (3 LINES) 33577 (3 LINES) 33578 (3 LINES) 33579 (3 LINES) 33580 (3 LINES) 33581 (3 LINES) 33582 (3 LINES) 33583 (3 LINES) 33584 (3 LINES) 33585 (3 LINES) 33586 (3 LINES) 33587 (3 LINES) 33588 (3 LINES) 33589 (3 LINES) 33590 (3 LINES) 33591 (3 LINES) 33592 (3 LINES) 33593 (3 LINES) 33594 (3 LINES) 33595 (3 LINES) 33596 (3 LINES) 33597 (3 LINES) 33598 (3 LINES) 33599 (3 LINES) 33600 (3 LINES) 33601 (3 LINES) 33602 (3 LINES) 33603 (3 LINES) 33604 (3 LINES) 33605 (3 LINES) 33606 (3 LINES) 33607 (3 LINES) 33608 (3 LINES) 33609 (3 LINES) 33610 (3 LINES) 33611 (3 LINES) 33612 (3 LINES) 33613 (3 LINES) 33614 (3 LINES) 33615 (3 LINES) 33616 (3 LINES) 33617 (3 LINES) 33618 (3 LINES) 33619 (3 LINES) 33620 (3 LINES) 33621 (3 LINES) 33622 (3 LINES) 33623 (3 LINES) 33624 (3 LINES) 33625 (3 LINES) 33626 (3 LINES) 33627 (3 LINES) 33628 (3 LINES) 33629 (3 LINES) 33630 (3 LINES) 33631 (3 LINES) 33632 (3 LINES) 33633 (3 LINES) 33634 (3 LINES) 33635 (3 LINES) 33636 (3 LINES) 33637 (3 LINES) 33638 (3 LINES) 33639 (3 LINES) 33640 (3 LINES) 33641 (3 LINES) 33642 (3 LINES) 33643 (3 LINES) 33644 (3 LINES) 33645 (3 LINES) 33646 (3 LINES) 33647 (3 LINES) 33648 (3 LINES) 33649 (3 LINES) 33650 (3 LINES) 33651 (3 LINES) 33652 (3 LINES) 33653 (3 LINES) 33654 (3 LINES) 33655 (3 LINES) 33656 (3 LINES) 33657 (3 LINES) 33658 (3 LINES) 33659 (3 LINES) 33660 (3 LINES) 33661 (3 LINES) 33662 (3 LINES) 33663 (3 LINES) 33664 (3 LINES) 33665 (3 LINES) 33666 (3 LINES) 33667 (3 LINES) 33668 (3 LINES) 33669 (3 LINES) 33670 (3 LINES) 33671 (3 LINES) 33672 (3 LINES) 33673 (3 LINES) 33674 (3 LINES) 33675 (3 LINES) 33676 (3 LINES) 33677 (3 LINES) 33678 (3 LINES) 33679 (3 LINES) 33680 (3 LINES) 33681 (3 LINES) 33682 (3 LINES) 33683 (3 LINES) 33684 (3 LINES) 33685 (3 LINES) 33686 (3 LINES) 33687 (3 LINES) 33688 (3 LINES) 33689 (3 LINES) 33690 (3 LINES) 33691 (3 LINES) 33692 (3 LINES) 33693 (3 LINES) 33694 (3 LINES) 33695 (3 LINES) 33696 (3 LINES) 33697 (3 LINES) 33698 (3 LINES) 33699 (3 LINES) 33700 (3 LINES) 33701 (3 LINES) 33702 (3 LINES) 33703 (3 LINES) 33704 (3 LINES) 33705 (3 LINES) 33706 (3 LINES) 33707 (3 LINES) 33708 (3 LINES) 33709 (3 LINES) 33710 (3 LINES) 33711 (3 LINES) 33712 (3 LINES) 33713 (3 LINES) 33714 (3 LINES) 33715 (3 LINES) 33716 (3 LINES) 33717 (3 LINES) 33718 (3 LINES) 33719 (3 LINES) 33720 (3 LINES) 33721 (3 L



# THE DESK-TOP REVOLUTION 9

A look at the latest developments, from magnetic storage devices to laser-optical storage systems

## Cost is the key in the storage systems battle

**THE DEMAND** is growing for systems that will store and display more information at the desk top, at less cost.

Predicasts\* stated recently that the market for magnetic storage devices expanded at 18 per cent annually in the decade from 1972, reaching \$9.6bn in 1991 in the U.S. alone. The world figure can hardly be less than \$30bn.

There is also much interest in laser-optical storage systems—disc, card and more recently tape (from the Dutch company Docdata for example) but although the potential is enormous, announced applications are rare.

The small Winchester disc drive, a rigid, fixed alternative to the floppy will, according to Predicasts, outsell its bigger 14 inch brother by 1985 but floppy disc drive sales will grow at 29 per cent per annum through the mid-80s, to top \$4bn in the U.S. by 1985.

Floppy disc diameters have dropped from eight inches to under 3.5 inches, but the intermediate size, 5.25 inches, is expected to predominate for the time being.

Cost is the key. The trend is indicated by a recent announcement from Singart, market leader in small disc stores, of a 3.5 inch double-sided floppy drive that can hold about 1,000 pages of text per disc and costs \$200 in OEM quantities.

These tiny discs have a hard plastic shell, encased rather than cardboard and are more robust and precise. Sony, Dysan, Hitachi and IBM offer similar units.

The Winchester disc has hitherto a strong challenge to the floppy

is cheap and text or graphics frames are nowadays retrieved in perhaps 10 to 20 seconds with computer-assisted indexing. Kodak, Bell and Howell, 3M and Intec are typical suppliers.

But the information kept usually remains unchanged for fairly long periods, if not indefinitely. Although alterable microfilm exists, updating usually involves making new frames.

Fiche (a postcard-sized piece of film with perhaps 100 frames on it) or 16 mm roll film is sent through the viewer to those needing the data. Distribution is not expensive.

There is also COM (computer output on microfilm), an automatic, direct conversion of computer data to human-readable microfiche frames. The technique is to photograph a cathode ray tube face on which the text has been displayed.

The arrival of the optical disc, however, is making some waves in the microfilm business and systems to convert text and forth between electronic storage and film have appeared.

All the new optical systems researched by Drexon, Kodak, Matsushita, Philips (Megadisc), RCA, Singart (Kerex), Sony, Thomson-CSF, and Toshiba have been made possible by the laser.

An extremely small spot of very intense light is switched on and off to modify the surface of a moving material to make microscopic pits, bumps or other effects that change the reflectivity at those points. These tiny on-off changes represent data bits and are read back

by another, lower intensity laser beam and a photodetector. One system, made public in March, is at the U.S. Library of Congress where 100 Thomson-CSF discs in a data "juke box" can hold 2.5m A4 documents in digitised form. Developed by Integrated Automation in the U.S., the system can access any document in no more than 10 to 15 seconds. It is available in the UK from Data Logic.

Storage cost is about one U.S. cent for 30 pages. The system can easily cost film, but this may not matter where many terminal users in large organisations must access many different documents, quickly and at their desks.

### High density

These systems have an extremely high recording density, exceeded at the moment only by silver halide film. Very roughly, the figures at the moment are 10m bits per square inch for magnetic, 100m for optical and 1bn for film (the bit equivalent of the microscopic visible text). However, magnetic and silver halides are quite fully exploited, whereas optical techniques are still young.

The magnetic media researchers are fighting back with "vertical" recording. Instead of making magnetic marks along the line of recording, they are made at right angles to the tape surface. This is rather like stacking luggage on end on an airport conveyor instead of laying it flat—more can be accommodated.

At such "micro-cent per bit" levels, the fact that most optical systems have no erasure hardly matters. The new, modified record segment is simply added and the old one ignored.

For legally oriented recording (banks, for example), non-erasure yields a permanent audit trail. However, erasable systems have been developed by NKK and Matsushita and sample quantities are expected soon.

The user-terminal would go on-line after "capturing" an image, making it immediately

available to anyone else—which paper records cannot do.

However, the fact that the whole of Encyclopedia Britannica will go on one disc needs to be tempered with reality. Optical systems are expensive, and after all, about 75 per cent of British companies have turnovers of less than \$100,000 a year. There is hope for paper yet.

\*Magnetic Storage Devices, Predicasts, 11001 Cedar Avenue, Cleveland, Ohio 44106. Telephone: (216) 795 3000.

By Geoffrey Charlish

in the past few years. The basic design is much more reliable and robust and the disc and drive are in a permanently sealed unit. More precision becomes possible, with the head flying only millimths of an inch above the disc surface, allowing smaller per-bit recording areas.

Britain's Rodime last year was first off the mark with a production 3.5 inch unit. Easily held in the palm of the hand, it can store 40 times the data of a 3.5 inch floppy and the data input/output rate is 10 times faster.

In practice, this means that a collection of floppies becomes unnecessary for the personal business computer user, and there is less screen waiting time.

In the U.S., Rodime is already supplying Televideo and Compaq Computer (which claims to be the fastest-growing company in U.S. corporate history). In the U.K., ICL is a customer.

Aside from magnetic tapes, for medium- or long-term archival storage of large amounts of data with relatively infrequent access, microfilm and microfiche have been widely used. Storage

Elaine Williams looks at the problems of complete integration

## Voice and data links move nearer

SENIOR managers spend a great deal of time talking on the telephone—some estimates are that about 15 per cent of the time is spent in telephone conversations in the working day. Only meetings take more of an executive's day.

Even when personal computers adorn every senior manager's desk, they will still need to communicate. Some industry observers see the executive's desk as the major battleground of office automation, and the telephone will be the winning weapon.

Many office systems manufacturers have formed joint ventures with private automatic branch exchange (PABX) suppliers. For example, ICL has joined with the Canadian communications company, Mitel, IBM with Rolm, and Xerox with Siemens.

Other corporations, such as Ericsson in Sweden, already have both office automation and communications products.

These companies are paving the way for the day when both voice and data share the same digital network—voice and data are then integrated. Data comes in many forms: electronic mail, computer talk, and information systems, such as videotext. There are few ex-

amples of this. Today it is possible to send data and voice but not without sacrifices on either side.

The reason why companies are so keen to introduce such communications is based on several factors. One is economy, as it means that a company will need only one network to handle its communications.

Another reason is the lack of keyboard skills, especially in Europe, among senior managers. A more sophisticated telephone is not as daunting as a fully-fledged computer.

### Analogous form

In order to send data over the telephone speech circuits means that the speed at which digital information is transmitted must be slowed down. This is because voice communication does not need a very high bandwidth—space—in order to be transmitted while data requires a large frequency range.

Also, much of voice transmission is done in an analogue form—this means that the variations in tone and loudness is directly mirrored by the electrical signal which is sent down the telephone line. Data, on the other hand, is in the form of digital pulses—either a signal is there, or it is

not. When data is transmitted over voice circuits then the digital pulses have to be turned into the analogue signals used for voice. Usually on-off signals are transformed into two frequencies using a modem (modulator/demodulator).

Voice signals transmitted on a data circuit must be similarly digitally-encoded, using a device called a codec. In the electronic office it is envisaged that voice messages stored in digital form can be transmitted to a workstation in the same way that text messages are stored for transmission in existing systems.

What is clear is that an integrated network capable of carrying voice and data must have sufficient bandwidth to cope with both. It is also certain that any network will be totally digital in nature, as most of the world's telecommunications equipment manufacturers are deeply involved in this technology. All modern telephone exchanges have computers at the heart of their design.

There are several large capacity data links offered which could form the basis of a digital data network. For example, British Telecom offers Kilo-stream and Megastream. Any future public integrated service will need to have a defined standard so that all manufacturers' equipment is

compatible. These companies which already have integrated their communications have tended to opt for their own standards.

Many PABX manufacturers have stated, when launching digital exchanges that future expansion of their products will allow data to be transmitted alongside voice. Some criticism has been made that futuristic features sometimes offered in reality are a pale shadow of the promises.

Fissey's TDX by contrast has been adopted by Telephone Rentals. This company chose the TDX because it did offer data communications which does not need a dedicated data link.

The ability to transmit data on an intermittent basis is becoming important because of the proliferation of terminals in the office. These terminals require access to a number of services such as connection to a company's mainframe computer, communications with other terminals, teletex and telex networks. Any communications network must be able to switch from one environment to another.

Most communications managers, however, are still at the stage of considering integrated voice and data networks, rather than having implemented them.

## Own your own business in the fastest-growing business in the world.

In 1976, the first ComputerLand® store opened in the USA. Today, there are over 600 ComputerLand stores all over the world.

The place to be is where the business is.

Sales of personal computers rose from £500 million in 1979 to £2.5 billion in 1981. Analysts forecast that by 1985 sales will increase fourfold.

How to be in the right place at the right time.

ComputerLand is the largest chain of franchised computer retail stores in the world. Under one roof are the best personal computers money can buy. And ComputerLand sell more kinds of computers to more kinds of people than any other store in the world.

Your future as a ComputerLand franchise owner.

You'll be your own independent part of a thriving business, with access to all the best brand-name computers and their allied products—software and peripherals. Being part of such a large group gives you unparalleled buying power and allows you to benefit from the lowest cost prices anywhere. And, of course, you get national advertising support, intensive training and assistance with site selection and store design.

**ComputerLand®**  
Make Friends With The Future

©Trademark of the ComputerLand Corporation, U.S.A.

What you need to take part in the ComputerLand future.

Management experience—a successful background that reflects your ability to establish and achieve your objectives. Proof of your financial stability that will enable us to encourage banks to invest in your future. Enthusiasm and understanding of computer systems and an interest in their retail potential.

Above all, you must have the desire to succeed, to belong to this area of unlimited growth and to recognise in it the opportunity for your own financial growth.



Take that step into the future today.

Fill in the coupon below. It's absolutely confidential. We'll send you a complete portfolio of everything you need to know about becoming a ComputerLand franchise owner.

**CONFIDENTIAL ComputerLand Portfolio Request** Send to: ComputerLand Europe, B.P. 2722, Route de Treves, L-2632 Findel, Luxembourg.

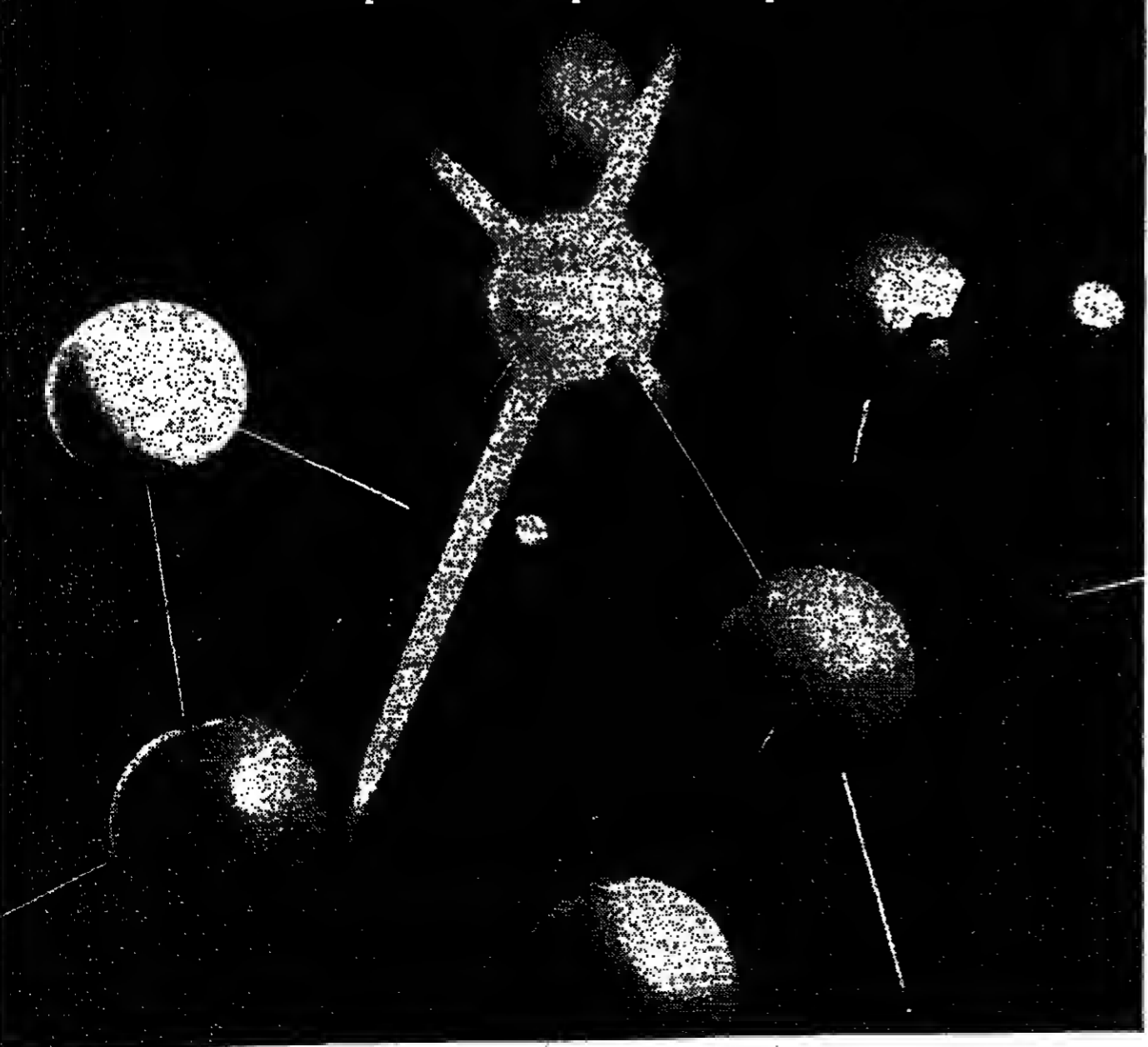
**YES,** I'm interested in finding out more about the opportunities ComputerLand offers its franchisees. Please send my confidential portfolio today. Of course, there's no obligation.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
Phone (\_\_\_\_) \_\_\_\_\_

FT 16-4-84

### PRINCIPLE:

Often the smallest things known to Man can release power of unparalleled potential.



### PRACTICE:

Introducing the £2532 DESKTOP GENERATION Micro with the power to run up to 4 terminals.



The DESKTOP GENERATION™ from Data General takes you further than you thought any personal computer could.

It can support up to 4 terminals without the need for a mini or a mainframe. These multiple groups can be connected locally.

Or geographically dispersed by connecting them through a British Telecom X25 packet switched network for an IBM SNA network.

Nothing else offers so many options in one box: it's perfect for data processing, office automation and technical applications.

One person can be using it for electronic mail, filing and diary management. Another for word processing. Another for data and information processing. And yet another for draughting, project management and analysis.

All at the same time! Quite a list. And the starting price for a single workstation is only £2532.

**ALMOST UNLIMITED COMPATIBILITY** Firstly, this amazing micro is compatible with all the applications written for Data General equipment over the past 15 years.

Secondly, it takes the widest range of software of any desktop. Besides Data General's three advanced operating systems it will accept packages written in CP/M-86 and MS/DOS.

Thirdly, it can link-up with IBM SNA and industry standard networks. The DESKTOP GENERATION™ also has the capacity to keep pace with future growth. Its memory is expandable up to 2 megabytes. And disc storage is expandable up to 30MB. That equals about 30,000 letters or 100,000 invoices. And of course you can add peripherals such as printers and graphic plotters.

Other micros may be fine for computer games. But when there's serious work to be done, come to Data General.

**Data General**  
a Generation ahead

DESKTOP GENERATION™ is a trademark of Data General Corporation. CP/M-86 and MS/DOS are registered trademarks of Digital Research Inc. and Microsoft Corp. respectively. Copyright 1983 © Data General Westboro, USA.

Market Communications Division, Data General Limited, Hounslow House, 728-734 London Rd., Hounslow, Middlesex TW3 1PD, 01-572 7455.

I'd like all the facts on the DESKTOP GENERATION™ — the system that puts you a Generation ahead.

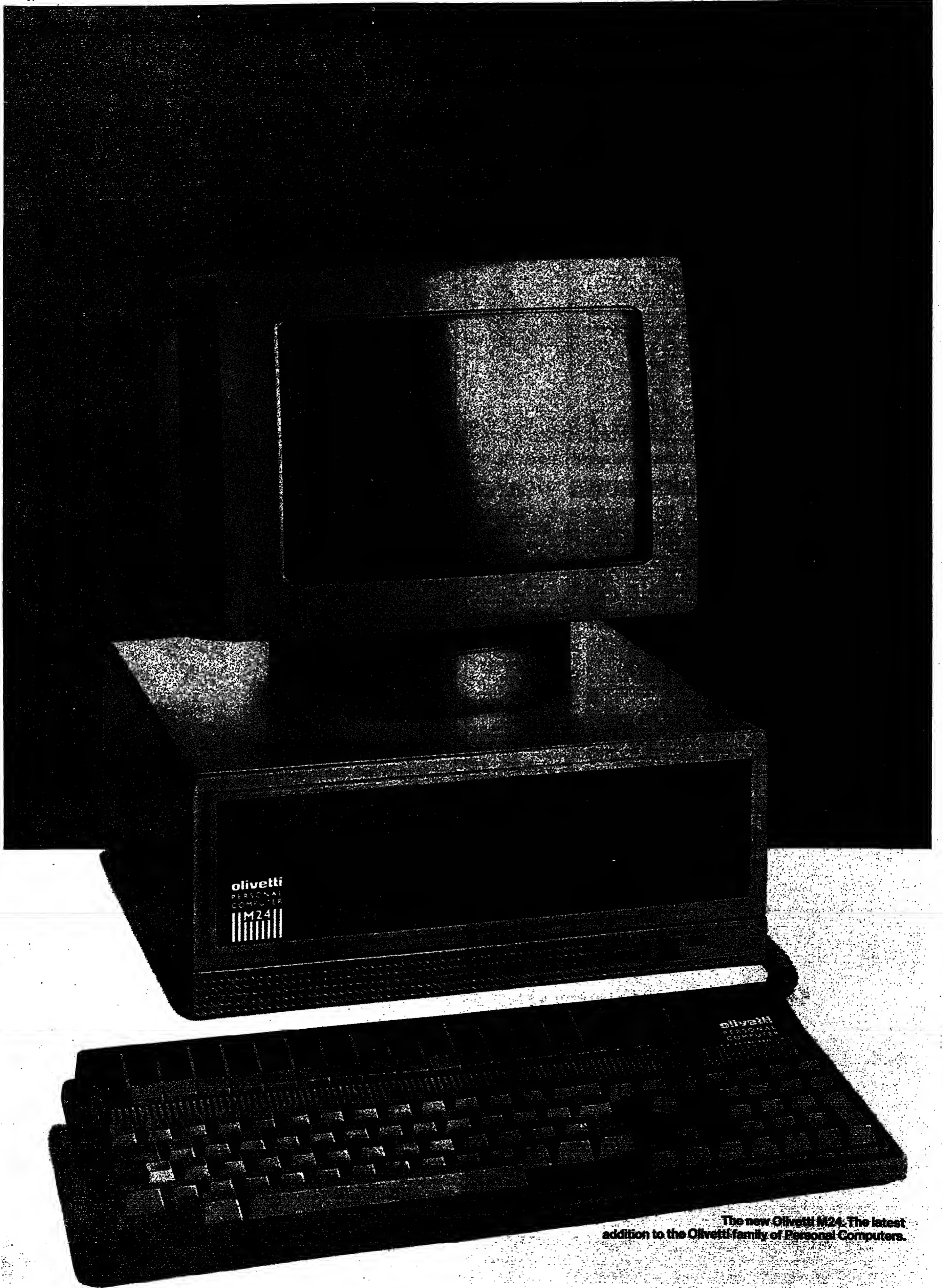
Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

Tel. \_\_\_\_\_

Nature of enquiry: User  OEM  Dealer   
Interest: Business Applications   
Office Automation  FT 16/4  
Industrial Automation   
Other



X



The new Olivetti M24. The latest addition to the Olivetti family of Personal Computers.

Int  
OU  
Tr  
Key 1st  
Bu  
Sales  
W  
software  
In  
te the re  
if y



# Introducing the new Olivetti Personal Computer. It's so impressive it could explain why our biggest competitors have just cut their prices.

The latest addition to the Olivetti family of personal computers will be launched on May 1st. It's very compact, very powerful and very expandable.

But best of all, it's not only fully compatible with other Olivetti personal computers it's also fully compatible with the industry standard.

Which means that right from the start it will be able to run over 2000 different software packages. With a lot more to come in the future.

In fact, we think the new Olivetti M24 Personal Computer is so impressive it could be the reason why our biggest competitors have just cut their prices.

If you'd like to be one of the first to know the full story, simply fill in the coupon now.

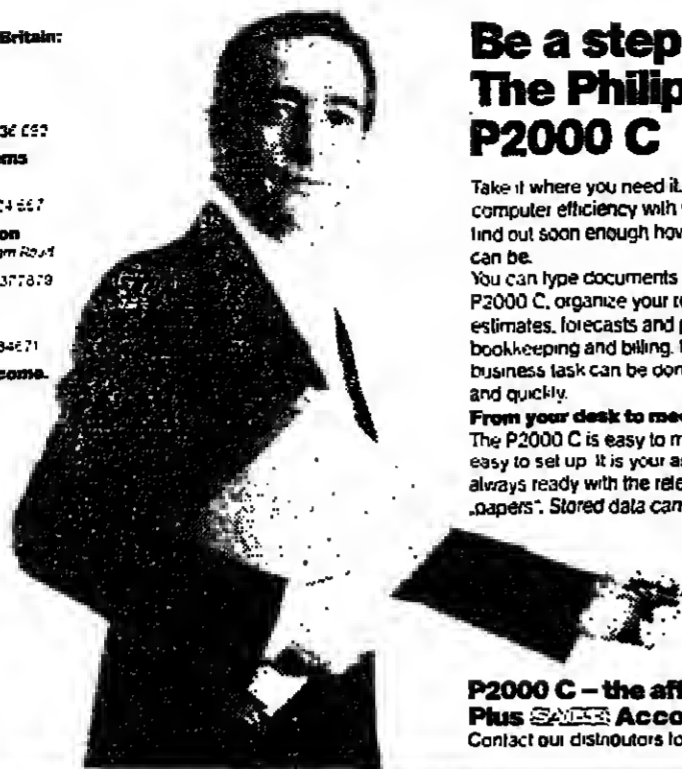
To: Valerie Belfer, British Olivetti, Olivetti House, 86-88 Upper Richmond Road, Putney, London SW15 2UR. Telephone: 01-785 6666.	
NAME	_____
POSITION	_____
COMPANY	_____
ADDRESS	_____
TEL NO:	_____

**olivetti**





**Distribution in Great Britain:**  
**Micro Design**  
 Oakfield House  
 25 Cleveley Road, Sandbach  
 Cheshire CW11 0JH  
 Tel: 029 2671 61 231; Telex: 34 022  
**Kingway Data Systems**  
 20 Garsfield Street  
 Chelsea, Surrey  
 Tel: 0181 871 81 11; Telex: 24 667  
**Midwestern Distribution**  
 Midwestern House, Birmingham Road  
 Belper, Derby DE8 1JG  
 Tel: 01773 3821 0811; Telex: 3773 19  
 14 E.C. World Trade Centre  
 St Katherine's Dock  
 London E1 1SA  
 Tel: 01 491 919 919; Telex: 6544 71  
**Dealer enquiries welcome.**



## Be a step ahead with The Philips Portable Computer P2000 C

Take it where you need it. You take computer efficiency with you. You will find out soon enough how fruitful this can be. You can type documents with the P2000 C, organize your records, do estimates, forecasts and projections, book-keeping and billing. In fact, any business task can be done more easily and quickly.

**From your desk to meetings**  
 The P2000 C is easy to move and easy to set up. It is your assistant, always ready with the relevant papers. Stored data can be called up

on the screen in seconds. Alternative plans can be rapidly surveyed. Time and effort are saved.

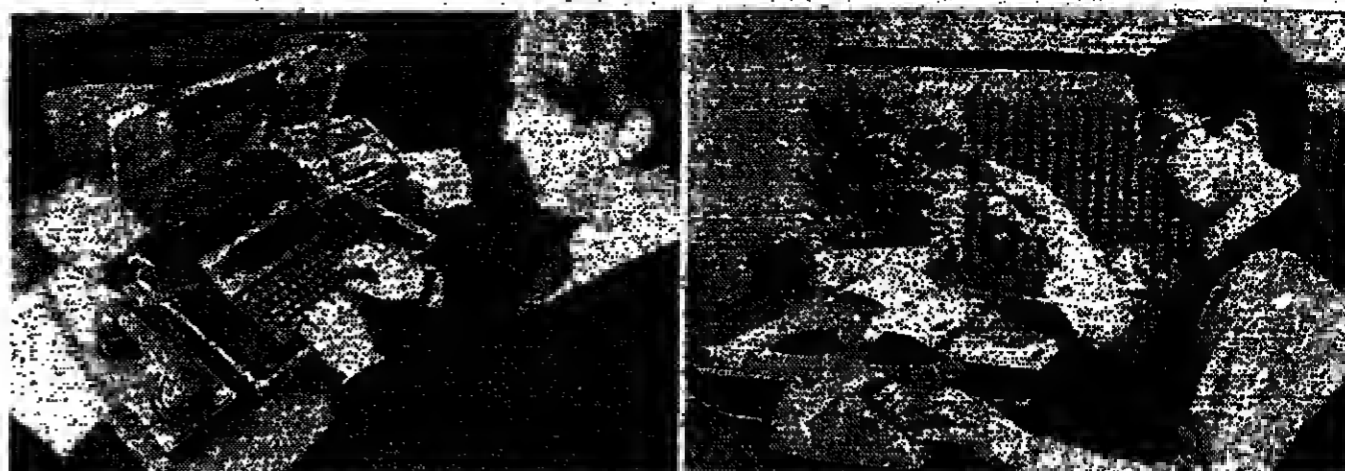
**At home or on business trips**  
 The P2000 C has a convenient carrying strap to help you take it home or on trips. Prepare for meetings, analyze plans, polish up documents with the decisive information literally at your finger tips.

- Feature Highlights**
- 1. Processor: 24 x 80 daisy wheel, 32 KB write RAM
  - 2. 64 KB RAM user memory 256 KB RAM disk controller
  - 3. Two 5 1/4" floppy drives with up to 640 KB per disk
  - 4. CPU and printer provide access to a large range of available software
  - 5. Interfaces: serial printer, external floppy drives, hard disk, data communications, slave monitor, IEEE-488
  - 6. CPU is a derivative of Intel 8086/8088
  - 7. System is a derivative of Intel 8086/8088

**P2000 C - the affordable portable. With free software. Plus S.A.I.S. Accounts Packages on Free Trial.**  
 Contact our distributors for a list of dealers in your area.



## THE DESK-TOP REVOLUTION 12



Left: portable computers open new horizons for executives on the road. Here an Olivetti M10 is being used to send a message over the telephone lines via an acoustic coupler. Right: Mr Jeff Bouch, office automation manager of the pharmaceutical division of Ciba Geigy, using Telecom Gold's electronic mail service, via a portable Whisper Printer

Growing revenues counter fears of paperless business world

## The power of print

ARE WE really plunging into a paperless business world in which affairs will be conducted via screen and keyboard?

Hardly. Market researchers at Frost and Sullivan conclude that, in 1982, world-wide revenues for all types of printers were between \$6.5bn and \$7.0bn.

This is some 10 per cent of the total world computer market and the percentage has been growing, not declining.

These figures partly result from the low end (under \$2,000) printer demand brought about by the increasing numbers of small business computers. Growth in the numbers of such printers is put by Frost and Sullivan at 78 per cent for 1983.

For 1984, the prediction is that over 2.5m such units will be sold in the U.S. alone.

But the market is becoming crowded. More than 100 vendors are said to be operating worldwide, offering 500 models in at least six technologies—and those figures exclude electronic typewriters, ticket printers and telex machines.

Clearly, paper will endure. Company executives want text and graphics for their briefcases. The display terminal, for all its advantages, cannot be carried about easily.

The three affordable categories for office printing, all operating character by character, are: dot matrix, fully formed (that is, typewriter-like), and non-impact.

In dot matrix printing, a vertical array of seven, nine, 16, 24 or even 32 thin rods move across the paper to make a line of print. The dots are made by the ends of the rods as they are pushed on to a carbon ribbon by tiny solenoids in appropriate combinations to form letters or numerals. The seven wires use five columns to make a character, nine wire machines use seven, and so on.

More rods mean better formed characters, although machines with two, slightly offset columns of wires are being used, one filling in gaps left by the other to give a more "dotless" character.

One objective is to compete with the "formed" machines to give print quality acceptable for company letters. Until 1982, dot matrix machines had about 90 per cent of the low end market. By 1987, it could be down to 70 per cent, according to F&S.

The design became known as "daisywheel" because each character of a solid font is carried on the end of a "petal," forming a radial web round the 360 degrees of the "daisy". This lightweight wheel can be rotated at high speed to align each character with a print hammer, which then makes the

imprint through a carbon ribbon.

There are 20 or so brands of daisywheel on the market, some now print more slowly (under 20 cps) and so are less expensive (\$300 to \$1,000). They are said to be selling well.

A variant, the NEC Spinwriter, uses a shuttlecock-like print wheel and has given the Japanese company a market share commensurate with that of Diablo, each had about 30 per cent in 1982, according to F&S.

Quime (part of IIT) had 15 per cent while another Japanese company, C. Itoh, has become a major force (19 per cent in 1983). The figures for 1983-84, however, might well be different, because companies such as Olivetti, Triumph Adler, Olympia and Bernes are making machines as part of their electronic typewriter operations, not to mention Wang and IBM.

However, the figures so far tend to speak for themselves. The Frost and Sullivan estimates of low-end machines delivered in the U.S. in 1983 was 1,700,000, of which 85 per cent were dot matrix, 12 per cent solid character—but only 3 per cent non-impact.

Even so, a recent report from Keith Wharton Associates is bullish on ink-jet. In our view, it is the clear favourite to have achieved the largest installed base by the end of the decade.

At the last National Computer Conference, Diablo, Katica, Printcolor and Sharp introduced new models, typically working at 20 cps in four colours, with 16 x 2 matrix characters. Prices are in the \$1,000 to \$3,500 range.

But there is now interest in thermal printing. Diablo has introduced a \$3,500 unit using a heated stylus to make pixels (picture elements) at 200 dots/inch and six pages a minute. There were others from Fujitsu, Mitsubishi, and Sanyo.

The message was clear enough: colour, graphics, and the Japanese are here to stay.

**Computer Printers Market in Europe, 1982; The Market and Competitive Outlook for Low End Printers, 1983; both from Frost and Sullivan, London (01-496 8377).**

**Market Report: Printers, Graphics and Integrators; Wharton Publishing, Richmond, Surrey (01-940 7366).**

By Geoffrey Charlsh

replaced with multi-code machines. In one mode, 150 cps (characters per second) basic printing is produced by single pass, bi-directional head movement with skipping of blank passages. In the second, "letter quality" work is produced by multiple passes to build up solid characters, with the speed reduced to about 30 cps.

In three years, the Japanese have won dominance in dot matrix machines and the market share of U.S. companies such as Centronics, IDS and Anadex has dropped from nearly 70 per cent in 1980 to 15 per cent in 1983, according to F&S.

Today says the research company, three Japanese companies, Epson, Okidata and Tokyo Electric have about 70 per cent of this segment.

It was the U.S. company Diablo that introduced a computer driven "typewriter" that dispensed with the type bars or golf balls of conventional machines.

The design became known as "daisywheel" because each character of a solid font is carried on the end of a "petal," forming a radial web round the 360 degrees of the "daisy". This lightweight wheel can be rotated at high speed to align each character with a print hammer, which then makes the

imprint through a carbon ribbon.

There are 20 or so brands of daisywheel on the market, some now print more slowly (under 20 cps) and so are less expensive (\$300 to \$1,000). They are said to be selling well.

A variant, the NEC Spinwriter, uses a shuttlecock-like print wheel and has given the Japanese company a market share commensurate with that of Diablo, each had about 30 per cent in 1982, according to F&S.

Quime (part of IIT) had 15 per cent while another Japanese company, C. Itoh, has become a major force (19 per cent in 1983). The figures for 1983-84, however, might well be different, because companies such as Olivetti, Triumph Adler, Olympia and Bernes are making machines as part of their electronic typewriter operations, not to mention Wang and IBM.

However, the figures so far tend to speak for themselves. The Frost and Sullivan estimates of low-end machines delivered in the U.S. in 1983 was 1,700,000, of which 85 per cent were dot matrix, 12 per cent solid character—but only 3 per cent non-impact.

Even so, a recent report from Keith Wharton Associates is bullish on ink-jet. In our view, it is the clear favourite to have achieved the largest installed base by the end of the decade.

At the last National Computer Conference, Diablo, Katica, Printcolor and Sharp introduced new models, typically working at 20 cps in four colours, with 16 x 2 matrix characters. Prices are in the \$1,000 to \$3,500 range.

But there is now interest in thermal printing. Diablo has introduced a \$3,500 unit using a heated stylus to make pixels (picture elements) at 200 dots/inch and six pages a minute. There were others from Fujitsu, Mitsubishi, and Sanyo.

The message was clear enough: colour, graphics, and the Japanese are here to stay.

**Computer Printers Market in Europe, 1982; The Market and Competitive Outlook for Low End Printers, 1983; both from Frost and Sullivan, London (01-496 8377).**

**Market Report: Printers, Graphics and Integrators; Wharton Publishing, Richmond, Surrey (01-940 7366).**

### U.S. LOW-END COMPUTER PRINTERS

Shipments forecast in thousands of units

Type	1982	1983	1984	1985	1986	1987
Dot matrix	869 (91%)	1,436 (85%)	2,644 (79%)	2,886 (75%)	3,351 (73%)	4,019 (70%)
Solid character	61 (6%)	221 (12%)	484 (15%)	824 (21%)	1,179 (26%)	1,514 (26%)
Non-impact	25 (3%)	43 (3%)	59 (2%)	72 (2%)	92 (2%)	109 (2%)

Source: Frost and Sullivan

### CASE STUDY: STRAIGHT LINES

## Moving on to system four

CLIVE BAYLEY is one of life's achievers. He is the exiled guitarist of the "Yes" pop group, the proprietor of the famous Chick nightclub in Chelsea and is now the head of West London-based company, Straight Lines.

This is a design and manufacturing company whose fortune is founded on the sales of cocktail glasses with built-in twirly straws. Straight Lines' products are on display in New York's Museum of Modern Art and at the Victoria and Albert and were singled out by the Design Council as "most interesting design of the year."

They sell well, too, and Straight Lines' UK turnover for 1983 was £1.5m and is on schedule to double this year.

In his two-and-a-half-year-old business, Mr Bayley has shown a growing commitment to office automation. Upwards of £10,000 has been spent on micros so far with another £18,000 committed for the immediate future.

"The budget for computers is fairly open," says Mr Bayley. "In the light of our experience we now want something that we don't have to update. One mistake we might have made is not looking at expansion."

The choosing (and the using) of the micros has fallen to Mr Mac Khan, the company accountant. The company's rapid growth has overtaken the storage capacity of its computers. They will shortly move on to their fourth system.

Mr Khan first selected an Apple machine to produce invoices for 300 accounts. This machine, he says, was outgrown within months and he purchased a Sirius with 1 megabyte of floppy disc storage. That switch brought problems in transferring the data from one machine to another but it too

became obsolete within six months.

His current system is another Sirius but with a 10-megabyte hard disc unit and running a suite of accounting/word processing programs from TABS.

He set it up to accommodate 3,000 accounts, and it easily manages the current 2,000 strong account base.

The company paid £2,500 for the TABS suite, having first contacted the software house at the annual autumn bonanza of the computer industry, the Compec exhibition at Olympia.

Straight Lines is well pleased with the TABS London distributor, Raindrop and has now decided to use this firm to buy and support its soon-to-be-installed system. This decision was not made until Mr Khan had heard the sales pitches of some 30 other suppliers.

The new demand is for more sophisticated software which copes with more chores and enables multi-terminal operation. "TABS is now doing a good job for us, but we want more information now," says Mr Khan.

He requires instant analyses of sales by territory and updates of sales force performance. He also needs revenue returns broken down to the 15 or so individual products.

There is also a requirement to have two terminals in the accounts department, plus one in Mr Bayley's office, one for sales and, once a warehouse is opened, a terminal linked to it.

Such a specification meant a move away from the Sirius which will, however, be kept on to handle word processing. It also meant a change of software. Mr Khan eventually selected for a package called BOS. This is designed for multi-users and can be tailored by the software house to meet

individual requirements.

To run this more powerful software, Straight Lines has bought a Crystal 68000 on recommendation of Raindrop.

The Crystal 68000 is a six-month-old British built micro with 26.6 megabytes of storage space.

It incorporates five operating systems which should ensure that the company can use a wide range of software packages if, as is likely, the demand for extra applications continues to grow.

"Our biggest problem all along has been software," says Mr Khan. "Anyone can learn to use hardware." His advice to those thinking of following the course he has taken is that they should expect to proceed grad-

ually.

He thinks a parallel manual system should be maintained for at least six months and he himself still keeps two filing cabinets full of paper work as a psychological backup than anything else now.

And he adds: "You've got to know what you want, because micro's aren't magic. From a management point of view it has been invaluable to readily see reports on monthly profit and sales and stock levels. To use it though forces the company into a discipline. The micros have put us in a correct framework."

Paul Fisher, Microbusiness Magazine

## YOUR MICROS OUR SERVICE

### SOME OF IT:

- \* NEW DIAL-UP SERVICES FOR MICROS
- \* COMMUNICATIONS SOFTWARE DISKETTE FOR IBM PCs.

### OR ALL OF IT:

- \* ON YOUR OWN NETWORK
- \* ON YOUR OWN TERMINALS
- \* AT YOUR OWN WORKSTATION
- \* GRAPHICS BY VIDEO SWITCHING
- \* NEW COMPUTER LINKS

FOR MORE INFORMATION OR A DEMONSTRATION PLEASE CALL OUR SALES OFFICE IN LONDON ON 250 3000 OR IN ROTTERDAM ON 1111 54.

DATASTREAM INTERNATIONAL  
 MONMOUTH HOUSE  
 58/64 CITY ROAD  
 LONDON EC1Y 2AL



## CFACC

The best accounts programme on the market

**MAIN MENU**

<ul style="list-style-type: none"> <li>1 Customer &amp; Supplier Files</li> <li>2 Sales Invoices</li> <li>3 Purchase Invoices</li> <li>4 Delivery Note Entry</li> <li>5 Purchase Order Control</li> <li>6 Payments Made</li> <li>7 Payments Received</li> <li>8 Record Adjustment</li> <li>9 Supplier</li> <li>10 Customer</li> <li>11 Supplier Statement Check</li> <li>12 Customer Statements</li> <li>13 Invoice Examination</li> <li>14 Customer &amp; Supplier Index</li> <li>15 Depending on Version</li> </ul>	<ul style="list-style-type: none"> <li>16 Stock Reports</li> <li>17 VAT Statements</li> <li>18 Returns Ledger &amp; Daybook</li> <li>19 Sales Ledger &amp; Daybook</li> <li>20 Ledger Code Print</li> <li>21 Capital Account</li> <li>22 End of Month/Year</li> <li>23 Accounting Section</li> <li>24 Payroll Section</li> <li>25 Bank Reconciliation</li> <li>26 Profit &amp; Loss Account</li> <li>27 Balance Sheet</li> <li>28 Management Financial Reports</li> <li>29 Profit &amp; Loss Account</li> <li>30 Finish Using CFACC</li> </ul>
---	--

Fully Integrated Software for CP/M, C/PAGE, PC-DOS & MS-DOS Microcomputers. Over 250 formats currently available. Single and multi-user systems. Specialised versions for different businesses.

**LOGICAL STEP Ltd.** WELLSBOURNE HOUSE, WALTON ROAD, WELLSBOURNE, WARWICKS CV35 9RH. TEL: 0789 42087/80064



THE DESK-TOP REVOLUTION 13

Work areas undergo radical changes

THE desk-top revolution is bringing with it not only upheaval in working practices, but also big changes to the total office environment.



The London headquarters of British Telecom's Telemessages service: desks by Lucas Furniture Systems accommodate a complex network of power and telecommunications cabling.

by VDU operators are a reflection of bodily fatigue... symptoms related to the visual system and working posture.

larger suppliers become larger and the smaller ones become smaller.

As micro mania sweeps Britain, office managers are becoming more aware of the relationship between ergonomically-designed workstations and efficiency.

Staccese Strafor, the world's largest office furniture manufacturer, along with other leading suppliers, carry out extensive research on ways to improve the office workstation.

Thus, the company explains, in an office of 40 (where the installation expenditure would total £44,000), savings of up to £32,000 a year could be achieved.

Visual Display Units, HSE Publications, 49 High Street, Holborn, London, WC2.

Michael Wiltshire

CASE STUDY: MICRO FOCUS

New market identified

MICRO FOCUS is one of Britain's more successful young companies exploiting the explosive growth in business personal computers.

What we are doing is right at the leading edge, says Peter Hewitt, marketing manager at Micro Focus.

The idea is to give every member of staff their own IBM PC/XT which can be used for everything from software development to an electronic diary.

Micro Focus example demonstrates how the personal computer is increasingly becoming the major route into office automation.

It should be said, as far as IBM goes, Micro Focus may be a special case. The company's main business is in supplying software development aids for the microcomputer industry.

World network

One of the decisions was that everyone who had a desk should also have a PC, says Mr Hewitt.

Micro Focus has identified a new market opportunity in large companies with computer staff trained in COBOL for the mainframe computers.

Most of these companies are using IBM, says Peter Hewitt.

M. W.



The Micro Focus electronic office: demonstrating how the personal computer is increasingly becoming a major route to office automation.

The company has installed two IBM 4341 mainframe computers which have been installed at its new offices in Newbury, Berkshire and at Palo Alto in California's Silicon Valley.

The company has installed a network of 150 IBM PC/XTs—the top of the PC range which has a large memory in the form of a Winchester disc drive.

Other uses include sales information, marketing and customer mailing lists and word processing.

As a result of the installation of this system, the investment per employee is about £20,000, a figure more comparable with manufacturing industry than the average office worker, even in high technology industries.

But Mr Hewitt adds: "We believe there are major benefits from that investment. We are only in the foothills of a steep learning curve and can envisage much greater expenditure per head."

One of those benefits is that it is making this small far-flung team feel as if they are working closer together.

Jason Crisp

CASE STUDY: BENEFITS OF COMPUTER USAGE IN A SMALL BUSINESS

System cuts down monthly accounting chores

HOTEL-OWNER Mr Tom Stewart is an example of a businessman who once knew very little about computers.

At first, Mr Stewart, who runs the Methuen Arms in Corsham, Wiltshire, had his own well-tried accounting methods and formulae and did not want to change them just because he was thinking of buying a computer.

The trouble was, although he had over 30 years' experience in catering and hotel management, he had no knowledge of computers.

computers in the small business. The Methuen Arms has 28 bedrooms and a staff of 35 and is an official tourist information centre.

After a half-hour demonstration of the Sord M23 Mk111 computer, Mr Stewart concluded that he could make it do what he wanted, rather than what it would do.

A game, Old Othello, was supplied with the computer and Mr Stewart, together with his two managers, Helen Mann and Clare Carost, worked as a team to "beat the machine".

you hammered, I've brought you down to my size, now I can get working!

Variables

After that he worked through the manual and very quickly assembled the kind of formulae that he needed to use for his own accounting systems.

He started by putting the hotel's payroll and tax deduction cards (P11s) on it and, to begin with, made all the entries by hand.

Although he had not used a computer before, he discovered two things about computing very quickly. The first was that computers could easily be used for mechanical calculations such as those associated with accounts.

For instance, having been fed with certain parameters, the computer can be programmed to work out the Free Pay and Tax due this week once it knows a personal code number.

In the same way it can calculate NEI contributions once it is told which deduction rate (A, B or C) is to be used.

Using PIPS he found it easy to develop the program week-by-week and at each stage a few more lines were added.

Usage of the system has now been extended to provide a directory of all business clubs, organisation, facilities and services in the Corsham area.

into use, he says it usually took him and his staff anything up to three weeks to produce these results by hand.

Now with his program running on the computer, all the accounts for the previous month are ready in two or three days.

On the basis of time and money it has saved, Mr Stewart says that the computer paid for itself within six months.

Before the Sord came

If you're asked to plan a computing system for your company, don't imagine you'll get away with a bit of light reading and conceptualising.

You'll soon have enough brochures, files, cuttings, notes and doodles to warrant an office of their own.

So our Distributed Resource System—DRS—

should prove quite a weight off your mind.

It's an office system you don't have to plan: designed to meet the local requirements of offices, yet still be flexible enough to meet the diverse needs of the company as a whole; to be economical enough to be bought from local budgets when necessary, yet still be capable of

communication as part of a network.

Every piece of equipment in ICL's distributed office system can provide personal computing and word processing, or share the resources of any other work station, at any time.

At a stroke, the problems of incompatible micros, and

choosing between central or decentralised information processing, no longer exist: our distributed office system grows organically to reflect the particular needs of your company.

So start as you mean to go on. Send for our brochure, and the only thing you'll be up to your eyes in is Thank You memos.

A word of advice to anyone planning an office system. Don't.



DRS MODEL 10 An intelligent workstation which can be integrated in a DRS MICROLAN local network, accessing and manipulating data.



DRS MODEL 20 A desk-top workstation with twin 1 Mbyte integral discs that can run alone or be linked via MICROLAN. It can also communicate via Wide Area Networks with ICL and IBM mainframes.



DRS MODEL 25 Shares the same features as a Model 20, with integral fixed and floppy discs of 10 and 1 Mbyte. It can also form its own local network, supporting two Model 20s or Model 10s.



DRS MODEL 50 A desk-style unit with the systems cabinet housing a 1 Mbyte disc and a single faced disc of 16 or 27 Mbytes. It can support any mix of Model 10, 20, 25, 40 and 50 systems.



DRS 8800 SERIES It can function as a stand-alone word processor. Or it can function as one of a number of personal workstations, supported by the DRS Document Storage System.

For more information, dial 100 and ask for Freefone ICL. Or send coupon to ICL Infopoint, ICL House, Putney, London SW15 1SW.

Name \_\_\_\_\_ Position \_\_\_\_\_ Company \_\_\_\_\_ Address \_\_\_\_\_

We should be talking to each other.





# THE DESK-TOP REVOLUTION 14

## CASE STUDY: NATIONAL COMPUTING CENTRE

### Key questions on efficiency

ASK Steve Price about computers to automate offices and he will pull out a pencil from his jacket pocket. "People have yet to devise systems that do a better job than a pencil and paper," he says.

Mr Price should know what he's talking about. He is the manager of the office systems division at the National Computing Centre, which earns some £13m a year advising the Government, companies and the country at large about the best ways of using computers.

But anyone who visits the organisation's Manchester headquarters and expects to find the place awash with desk-top machines is in for a disappointment. The 350 or so staff in the head office (of which some 200 are professional computer people) can muster only about 40 personal micros between them.

Twenty of these are Apple computers which the NCC has had about three years ago. The machines are linked in a network and used by consultants and managers in the organisation's office-automation and communications divisions.

These people spend most of their time writing reports and books or giving talks about the best practices in office computers. The network, installed by the British company Zynar, gives the computer researchers a chance to try out their ideas in real office tasks.

But apart from this system, the other computers have been installed in a piecemeal fashion. The NCC wanted to learn about how people use the machines and come up with grand plans later.

"We thought we'd let a thousand flowers bloom," says Mr Price. "We can pour on the weed killer afterwards."

"In five years, we will probably have a strategy for office automation and virtually everyone will have a computer," says Dr Peter Scott, manager of the communications division. "But it's too soon to start implementing any such ideas right now."

The NCC's staff have, however, learned a lot in their use of desk-top machines which would benefit others who are thinking about office automation.

Take, for instance, Joe Abbott, who works in the centre's data processing division. He researches into new programming techniques—for example, he is now working on ways to test the quality of software. Mr Abbott has to communicate the results to the NCC's customers, mainly through hefty reports of up to 50,000 words.

Mr Abbott used draft reports long-hand. He would then send them to a typing pool, re-edit the documents and send them back again. Before it was

finished, the report might visit the typing pool a dozen or so times.

Last year, Mr Abbott's wife had twins. He had to take time off and his work started to suffer. Mr Abbott decided he needed a computer. The NCC wasn't willing to buy one for him, so Mr Abbott himself spent £3,000 on an Apricot personal computer, plus printer.

The results have been staggering. In the four months since Mr Abbott bought the system, his productivity has shot up. He says that with the hardware he can write up to 5,000 words a day—the previous maximum was 3,200. As well as finishing reports in half the time, Mr Abbott can make his work more polished because editing is so much easier.

Whereas Mr Abbott uses his

But the discipline was useful I had to point out to myself that the time spent in this activity would probably not have been worth the result."

The biggest advantage of the machine to Mr Blood has been in presenting financial information, sales budgets for instance. He can also tell the computer to assess what is likely to happen in the light of different circumstances.

For example, the machine could forecast the cash that the NCC would obtain from its training course, and how many people would be needed to run them, if demand were suddenly to shoot up.

"I can get answers to a lot of 'what if' questions to a far better degree than before," says Mr Blood.

What are the disbenefits?

he is not very quick on a keyboard. To dictate letters is, therefore, a more efficient way of using the time.

The only staff in the NCC's head office who can communicate with each other using computers are those linked via the Zynar network. Paul Wilson, one of the consultants with this facility, admits he is a computer enthusiast.

He uses his computer not just for word processing and for holding files but to send tit-bits of information to his colleagues. This can be a useful way of passing on snippets of news that people might distribute if they spent all day chatting to colleagues over tea or coffee. But they lack the time for such a writer of informal conversations—and the information is not deemed important enough for a telephone call or a written memo.

The extra communication that this facility produces raises the quality of work, say the NCC's managers, although the exact effects are virtually impossible to quantify.

Sometimes people are bolder using the keyboard than they would be with a written memo. For example, people may be more inclined to send to their boss a computer message to "nudge" him into doing a job that he had forgotten about.

Of crucial importance, says Mr Wilson, is the time that it takes to learn to use an office-automation system. Even for computer professionals who can be expected to know something about hardware and software (and be interested enough to use the machines) the time can run into weeks.

"Sending someone on a training course is not enough," says Mr Wilson. "Managers have to allow for employees spending a lot of time not doing their ordinary jobs but learning how to use the computer."

Despite the caution at the NCC about setting up a corporate policy on computers, one man has evidently decided that the machines are for him. This is David Fairbairn, the centre's director. He has a portable Tandy computer on which he writes his own speeches and letters—even on aeroplanes.

The next step is to connect this up to another machine in his secretary's office.

The degree to which men and women employ computers in the office, says Mr Wilson, is ultimately related to what kind of people they are.

"One thing we still don't know is how much use people will get out of computers—even when the technology is extremely sophisticated—if the people themselves are basically disorganised," he says.

Peter Marsh



Mr David Fairbairn, director of the National Computing Centre

machine solely as a word processor, Pat Blood, a manager in NCC's sales-support division, has a more diverse range of applications for his Tandy micro-computer.

The centre bought four of these three years ago. Apart from Mr Blood, three other sales managers were given the machines. There was no stipulation as to what they used the hardware for.

Mr Blood and his colleagues are responsible for a range of sales activities. The items sold could be books or documents that give advice on computers. Or they could be services such as the provision of training courses.

Despite being involved with computers for a long time (he had been a programmer and the head of the computer section in a manufacturing company), Mr Blood had never had a machine to himself.

"One difficulty was that I had to behave as a manager rather than as a programmer. I had to stop myself wanting to change software in the machine.

"There is a danger that you can get sucked into doing jobs in too much detail. You can become absorbed by the power of the machine and time disappears very quickly."

"You can start to come up with a lot of very precise information on a set of circumstances when probably you could have got by with looking at the situation on a micro-level."

As an example of this, Mr Blood once asked his machine to assess all the charges that the NCC's administrators levied on its staff for using the centre's big mainframe computers. The information was needed to settle a particular query.

Now the machine has been set up to obtain the data, Mr Blood finds himself obtaining it on a routine basis—even though he doesn't really need the information.

Having his own micro doesn't mean Mr Blood has dispensed with his secretary. He did try typing his own letters for a while but like many managers

## CASE STUDY: BANHAM ALARMS

### A route to easier accounting



Staff at Banham Alarms operate the new multi-user system installed by Bromcom.

BANHAM Patent Locks is one of Britain's oldest security companies. Its areas of involvement range from security hardware, such as locks, grilles and safes, to intruder alarms, closed-circuit TV and fire alarms.

The company is divided into several areas, one of which, the security alarms division, has already installed some 20,000 security systems.

More than a year ago, the division decided to automate its accounts and administrative operations. The first stage was the computerisation of the sales ledgers—ultimately holding full details of more than 10,000 current accounts.

The division looked at several systems, but decided that software requirements would make or break their particular application. It had to be capable of providing full, up-to-

the-minute details of each customer, together with account details and invoice generation, and also had to allow instant recall of archival client invoice information.

After software and hardware evaluations, the division eventually decided that Bromcom was most suited to its needs. The division took delivery of a four-terminal multi-user multi-

processor SuperStar system with a slightly modified, tailor-made Bromcom sales ledger application software and a purpose-written invoicing program.

SuperStar, which starts at £2,400, is claimed to be considerably cheaper than other competitive products, for a similar system based on a mini-computer would have cost in

excess of £20,000 and would have taken longer to implement.

Sales ledger accounts could be easily updated with the knowledge that a file can be simultaneously accessed by all users with only a particular record being locked. A message is displayed if a terminal tries to access a record currently being updated by another terminal.

In full operation, the system allows all users (up to 16) to enter, say, invoices or payments simultaneously; this is the added benefit for genuine multi-user ability. Each user can, of course, operate different packages at the same time, for instance Ledgers, WardStar, dBaseII, and so on.

Designed and manufactured by Bromcom in the UK, SuperStar is a multi-user multi-processor system that is now based around a 16-bit master processor; the system provides full record and file-locking facilities, multi-user capabilities, up to 160Mbyte of Winchester storage and fast tape streamer back-up. It supports up to 16 terminals (more by network-link), each with a separate slave processor running industry standard operating systems.

Michael Wiltshire

## CASE STUDY: AIRSPEED CARGO

### Decision-making is far easier now

AT THE END of one of Heathrow's busy runways, the ten exhausted but far from rotten Apple II which controls a time when most people in his business are still struggling with the technology of the Remington typewriter.

The decision to buy computers was forced on him when a computer bureau he was using to process the sales ledger could no longer handle the work. They needed to upgrade their equipment and effectively wanted Airspeed to help with the cost. Mr Widdowson did not share the bureau's enthusiasm for their idea and decided to go it alone.

First, he worked out exactly what he wanted the system to do. Second, he decided on how much the company could spend. He admits that the costing process was far from logical and relied more on gut feelings. Then he went out to look at the technology.

"Knowing little about where to go, I approached all the big names. But after receiving some silly offers I decided to buy from a nearby dealer," he says.

Mr Widdowson admits that it was not one of his best decisions. The dealer went bankrupt in the early stages of the project, but fortunately the suppliers continued to support him.

than he admits. This elegant bluff has enabled him to install and successfully run a simple local area network at a time when most people in his business are still struggling with the technology of the Remington typewriter.

The decision to buy computers was forced on him when a computer bureau he was using to process the sales ledger could no longer handle the work. They needed to upgrade their equipment and effectively wanted Airspeed to help with the cost. Mr Widdowson did not share the bureau's enthusiasm for their idea and decided to go it alone.

First, he worked out exactly what he wanted the system to do. Second, he decided on how much the company could spend. He admits that the costing process was far from logical and relied more on gut feelings. Then he went out to look at the technology.

"Knowing little about where to go, I approached all the big names. But after receiving some silly offers I decided to buy from a nearby dealer," he says.

Mr Widdowson admits that it was not one of his best decisions. The dealer went bankrupt in the early stages of the project, but fortunately the suppliers continued to support him.

The dealer recommended a

Nestar system which links Apples that act as dumb terminals. It is driven by an Apple II which controls a 16.5 MB hard disk on which is stored the software and all the files. Airspeed have two systems working in parallel serving 10 terminals. Clerks and managers can have access to the same files as their colleagues, while working from their own terminals.

There is an air of almost reckless practicality in the office. Clerks switch work from terminal to printer or telex tape cutter by manually plugging in the right connections. No fancy switches here. One important wire actually runs over the hot pipe leading to a central heating radiator, but there have been no serious breakdowns.

The staff like the system. It takes a school-leaver about three days to learn, taught by one of the experienced staff. One clerk says: "In my previous job we had to type all the addresses and figures out by hand. I could never go back there now."

Neither could Peter Widdowson.

Since then he estimates the up-grades have pushed the price up to about £40,000, which is a lot of money for a system that is nowhere near being state-of-the-art. But it has worked which is a lot better than many other similar configurations.

Other similar configurations.

Other similar configurations.

Other similar configurations.

"If you had to include the time that I've spend on the system then it would be impossible to cost-justify it. I reckon that it pays for itself on capital costs alone, between the second and third year."

Compared with more sophisticated computer systems, this one is slow. It takes a long time (5-10 minutes) to load a program onto a terminal. The staff have adapted and usually keep different programs running on separate terminals, scurrying up and down on their wheeled chairs like human packet switches.

There is an air of almost reckless practicality in the office. Clerks switch work from terminal to printer or telex tape cutter by manually plugging in the right connections. No fancy switches here. One important wire actually runs over the hot pipe leading to a central heating radiator, but there have been no serious breakdowns.

The staff like the system. It takes a school-leaver about three days to learn, taught by one of the experienced staff. One clerk says: "In my previous job we had to type all the addresses and figures out by hand. I could never go back there now."

Neither could Peter Widdowson.

Since then he estimates the up-grades have pushed the price up to about £40,000, which is a lot of money for a system that is nowhere near being state-of-the-art. But it has worked which is a lot better than many other similar configurations.

Other similar configurations.

Other similar configurations.

Peter Knight



### What's the future of a system that can't network?

For any system that can't network, the future is grim. Which is why more and more people choose HiNet™ Local Area Network. People like British Telecom, DHSS including Regional Health Authorities, MOD, Pilkingtons, Smith & Nephew, Burton Group, Isle of Man Government and Police. In all, over 1,000 operational networks throughout the UK.

They find that, in one competitively priced system, every office within the company can share and access fast, efficient, and secure business information, instantly.

HiNet™ is IBM compatible, runs word and data processing simultaneously on the same network, shares disk storage and printers, can connect to telex and communicate with the head office computer.

The CP/M™ and MSDOS™ compatible software allows a variety of multiuser packages for accounting, word processing, stock control, production, material costing, solicitors, insurance, personnel records, and many more.

Even when you start with as little as one workstation, there's no possible reason why you should settle for less than a system that offers total local area networking.

Find out more, and to see HiNet™ in action, contact us for full information and the name and address of your local DMS Business Centre.



Digital Microsystems Ltd, Molly Millar's Bridge, Molly Millar's Lane, Wokingham, Berks RG1 2PQ. Tel: (0734) 793131

\*CP/M is a trademark of Digital Research Inc. MSDOS is a trademark of Microsoft Ltd. An East Group plc Company.



£33,600

The revolutionary MAPPER System from Sperry made the headlines when it was introduced in 1981. For the first time ever, people with little or no computer knowledge could talk directly to a main-frame computer.

They could locate, extract, modify and manipulate the information they needed—in English. There was no need to understand computer logic or computer languages.

The MAPPER System now has over 70,000 users. Amongst its array of talents is its ability to display results in high colour graphics. And let you electronically mail vital information to others in an instant.

On top of this, MAPPER has enabled some D.P. departments to increase their productivity by as much as 1000%.

Until now MAPPER has only been available on Sperry mainframes or as a service from independent bureaux. But that's all changed.

## Mapper power at a Micro price.

### NEW MAPPER 5.

Now Sperry are pleased to announce the arrival of MAPPER 5, the powerful new microprocessing system which makes the MAPPER System available at a price you'd expect to pay for a normal micro system.

### THE AFFORDABLE SYSTEM.

For only £33.6K you can buy the complete MAPPER 5 System. This comprises: a compact Processor; a Mass Storage and Back-Up System; three Sperry UTS display stations, expandable up to 16; a comprehensive, easy-to-understand self-instruction method, which you can learn in a day; and all the MAPPER software you need to run the system.

All this at a price not very different from the price of the MAPPER software alone on a larger system!



### THE FLEXIBLE SYSTEM.

Sperry MAPPER 5 can be tailored solely to the needs of your department or

small business, including applications which previously may not have been considered practical. Its inherent flexibility makes it easy to integrate into any organisation, whatever its size or function.

### MAINFRAME CONNECTIVITY.

MAPPER 5 allows you to plug in directly to your main Sperry corporate computer. If you use an IBM† or other mainframe, MAPPER 6, its twin, provides mainframe connectivity. So as well as access to your own information, you can get your hands on corporate data, too.

### SEE MAPPER 5 IN ACTION.

MAPPER 5 is a high performance yet low cost processing system.

For the first time, it puts the power of MAPPER within the reach of practically every company or department within a company.

For more details or an invitation to a seminar to see MAPPER 5 in action, complete the coupon or phone 01-961 3616.

## **MAPPER** Computer power without computer programming.

Please send me details of MAPPER 5

Please send me details of the MAPPER Seminar   
(tick as appropriate)

Name

Title

Address

Tel. No:  ©1984 Sperry Limited.



The computer people who understand how important it is to listen.

Sperry Limited, Dept. DE1,  
Computer Systems,  
Sperry Centre,  
Stonebridge Park,  
London NW10 8LS

MAPPER is a trademark of the Sperry Corporation.  
†IBM is the trademark of International Business Machines Corp.



THE DESK-TOP REVOLUTION 16

Fierce competition between major suppliers

U.S. market becomes a battleground

THE U.S. office automation scene is not so much a marketplace as a battleground.

The heavy artillery in the shape of IBM and AT&T are lined up for what industry watchers term "World War III." Shooting for a smaller piece of the action are hundreds of vendors of minicomputers, workstations, personal computers, private branch exchanges and the multitude of add-on products that go together to automate offices.

Basically, IBM and AT&T will be battling over which will wire up office buildings for data communications. As the battle begins AT&T has most of the wires and IBM has most of the gadgets that hang on those wires.

Last month, however, AT & T began its attack upon the IBM stronghold with the announcement of a series of mini and micro computer products. Before the year is out, IBM is expected to launch its "wiring system," a local area network, and in conjunction with Rolm Corporation the switching systems that connect local wires to the rest of the world.

There is a lot at stake. By 1990, 80 per cent of all white collar workers in the United States will have information devices on their desks, according to market analysts.

World personal computer shipments will total \$8.7bn this year, according to International Data Corporation. Of those, the market researchers expect \$5.4bn to go to the U.S. business market.

Expansion

U.S. shipments of private branch exchange (PBX) systems will top \$3bn this year, according to IDC, and could grow to \$3.2bn by 1987.

Word processor sales of over \$3bn this year with the potential to reach \$4.2bn by 1987 add another gem to the office automation market crown.

Then there are whole segments of the office automation field that are just beginning to emerge as sizeable markets. Local area networks have been talked about for several years, but this year they may become a widespread reality. Microcomputer software is also becoming a significant market sector.

Changing the shape of the office automation market is the

is now regarded as mandatory for any new personal computer (with the singular exception of Apple Computer's products).

IBM-compatible computer makers are, however, becoming increasingly concerned that "Big Blue" will introduce new proprietary features for its next generation personal computer product leaving the "compatible" makers out in the cold.

The personal computer has also made radical changes in the office automation equipment market. In 1982, close to 54 per cent of word processing units were dedicated to that task. By 1987 less than 29 per cent will be special purpose machines; the rest will be personal computers, according to IDC.

IBM's latest addition to its personal computer arsenal includes the transfer of its displaywriter word processing software to the personal computer.

The move sorts out a previous inconsistency in IBM's office automation product line where the dedicated word processor competed with the personal computer.

"The PC software spells the end of the Displaywriter," says Mr John Kiefer, an analyst with Infocorp of Cupertino, California.

Steady gains

With its troops in order, IBM is steadily gaining ground in the office automation market.

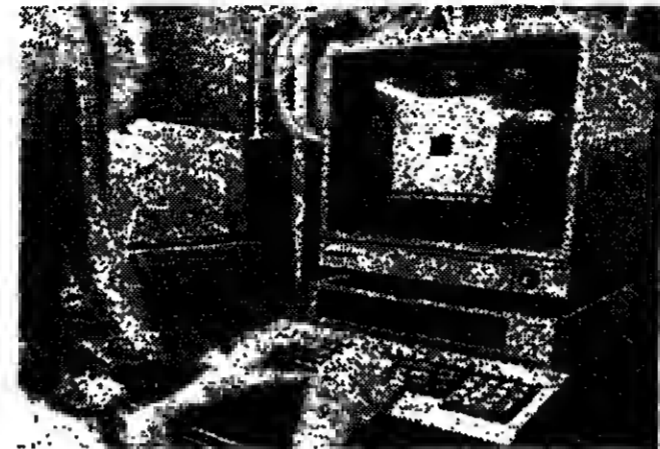
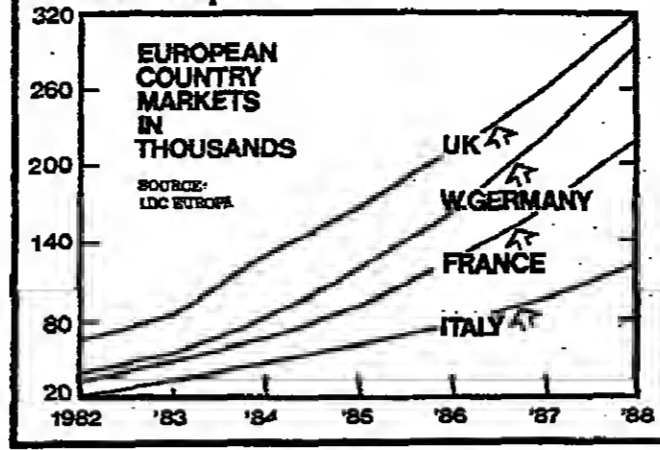
"The combined installed base of IBM's PCs and word processors (270,000 at end of 1982) makes it probable that more U.S. business office desks have workstations made by IBM than by anybody else," says IDC.

But "Big Blue" is not invincible. AT & T—which matches IBM in size and stature—is out to prove. Recently AT & T introduced "the first of several" computer products—a range of computers, built around its "Bell Mac" 32-bit microprocessor designed at Bell Labs.

The machines range in price from \$10,000 up to \$300,000 and cover the performance of a multi-user microcomputer to a super-minicomputer.

A common theme throughout the AT & T range is the "Unix" operating system. Created at

Business/Professional Computer Unit Shipments 1982-88



The Japanese have yet to make their mark in the West in professional personal computers. This Sanyo MBC 550 gives a hint of what is to come

Bell Laboratories over a decade ago, Unix is a multi-user operating system with a strong bias toward communications.

Already Unix has a broad following according to the Gartner Group of industry analysts, the market for Unix-based systems will grow to \$6bn in 1988 from \$150m in 1980. AT & T is expected to take a major share of that market.

AT & T is expected to fill in the gaps in its product portfolio with several products that it will license from outside manufacturers. One of the most important will be Convergent Technologies, a California company that specialises in building multi-user workstation systems. Convergent is developing a special product (or products) for AT & T but they are expected to be high performance 16-bit multi-user systems.

In addition, AT & T is widely rumoured to be preparing a product for the personal computer market.

AT & T's entree into office

Software conquers complex keyboard barrier

Japan poised for new breakthrough

JAPANESE software has recently conquered the challenge of the 2,000-plus Chinese characters, called "kanji," and the country's market for desktop computers is expected to increase rapidly, beginning this year or next.

A widespread lack of familiarity with keyboards, the lack of a uniform operating system among different brands, and bureaucratic barriers to computer networks have combined to leave Japan well behind the West in the use of small computers.

The Japan Electronics Development Association (JEDA) said that in 1982 sales of "personal computers" increased sharply, by 116.2 per cent in value, to ¥231bn (\$1.01bn), and by 168.5 per cent by number, to 762,166.

JEDA said sales of "office computers" increased by about 30 per cent, to ¥5,321, worth about \$1.5bn.

While JEDA has not yet assembled its estimate for 1983, Software International Inc. estimates that a million microcomputers were sold in 1983. But only 10 per cent, or 100,000, were 16-bit machines suitable for business or Japanese language word processing use. Perhaps 100,000 "dedicated" word processors were also sold.

About 70 per cent of the small computers sold this year in Japan have been game computers, and Software International claims that games account for fully 80 per cent of the software sold here.

Reputation

Anyone who has visited the workplace of a Japanese bureaucrat, businessman, or journalist would look long (searching behind the seemingly obligatory tall piles of papers) before finding a desktop computer. The few that are around are likely to be run by the young women who go to special training schools for word-processing, computerised accounting, or programming.

Indeed, Japan's reputation as a technological hotbed would pale quickly if the current state of desktop computers were taken as the major criterion. But the situation is changing very quickly.

Until recently it has been difficult for small computers to handle the Japanese character set, and documents were

\$160 to about \$48, but in Western nations the computer comes equipped to handle one or more operating systems.

Toshiba, NEC, Japan's leading small computer makers, with about 50 per cent of the market, and Epson, known for its printers abroad, have moved to remedy this with MS-DOS and CP/M operating systems built in, and the result has been encouraging. Others are following.

NEC claims about 600 different types of software are available for its 9600 series. About 100,000 of these classy machines have sold since they were introduced in October 1982, priced between ¥328,000 to ¥988,000 (\$1,400-\$1,750).

IBM-Japan is rapidly becoming a major force in Japan's small business computer market. Priced between \$4,000 and \$8,000, IBM will not say how many it has sold but is known to be pressing Matsushita, the company which makes several major components, to increase production.

Fujitsu, Hitachi, Sharp, Toshiba, a joint venture between Fujitsu and Matsushita, Sord, Apple, Radio Shack, and several others are all marketing small computers in Japan. Given the size and engineering expertise of these companies, and their recent commitment to develop in-house software engineers, the stage is set for what could be rapid increases in small computer purchases.

Japan's telecommunications law has prohibited most computer networks, and there is nothing like the colonies of computer "hackers" in the West chatting away via computer. But with a new law expected in Japan by April 1985, computer networks will develop eventually.

The Japanese take heart by recalling that in the 1960s the first exported Toyotas, underpowered and tinny, literally fell apart at the high speeds normal on Western highways. Few doubt that Japan will eventually overcome a similar shaky start in small computers.

Since mistakes can be corrected on word processors, and with the results being clear and reproducible, the interest in "wapro" as it is called here, is great among Japanese office managers.

As if the language was not enough of a barrier, the various computer manufacturers initially ran into problems by not using a standard operating system, such as M-DOS or CP/M. That meant that software written for one company's machine could be used on another machine only if it was altered.

Fearful of giving competitors any ground, an infertile field was laid for software development in Japan.

In order to use software which runs on a standard operating system, one must often have a special software disk with the correct operating system. Japanese computer enthusiasts rejoice because the price for these standard operating disks has dropped from

By a Special Correspondent

'Once a year, for the past five years, Sir Clive Sinclair has stunned the computer world by introducing a computer product that breaks new ground in both price and technology. With his new QL micro, he has done it again.'

Personal Computer News, February '84

'... a specification that obliterates contemporary price/performance standards.'

Financial Weekly, January '84

'... for £399 the QL offers the sort of package that would cost you getting on for 10 times that sum elsewhere in the marketplace.'

Evening Standard, January '84

'At its price, it is going to be well nigh impossible to beat.'

Daily Telegraph, January '84

'Sinclair have opened a whole new market for computers by marketing the QL at such a low price. It would be an ideal machine for Estate Agents, shop-keepers, colleges, schools, hobbyists and who knows who else.'

Electronics and Computing, March '84

'It could be argued that the software itself is worth the £399 price (in which it is included).'

Electronics and Computing, March '84

'... destined to be one of the most important micro-computers ever... it suddenly puts serious business applications and serious computing in easy reach—even of those who've never dared to touch a computer before.'

Soft, March '84

'Once again, Sinclair is ahead of the field, offering this milestone in computer architecture for under £400.'

Personal Computing Today, April '84

"It is very difficult not to be carried away by the QL"

Personal Computer News



Technical specification

- \* Price £399.
\* Includes four business software packages: word processing, spreadsheet, database management, business graphics.
\* Fast, powerful 32-bit microprocessor (normally found in machines costing thousands of pounds).

- \* Massive memory—128K RAM as standard.
\* Two microdrives built in—rapid access to stored data.
\* Features multi-tasking—the ability to use several programs simultaneously.
\* Multi-display capability—the QL can display the results simultaneously in different parts of the screen.

- \* High-resolution colour graphics.
\* Full networking capability—up to 64 QL and Spectrum computers can be linked.
\* Measures 19in x 5 1/2in (approx).
\* Full-size QWERTY keyboard.
\* Two RS-232-C ports for peripherals like printers and modems.
\* Use with your TV or a monitor.

For more information Phone Camberley (0276) 686100 for a full-colour brochure, or write to Sinclair Research Ltd; FREEPOST, Camberley, Surrey GU15 3BR. Sinclair and QL are trademarks of Sinclair Research Ltd.

Shown here 80% actual size.





# THE DESK-TOP REVOLUTION 17

## Britain's enthusiasm for the personal computer is unmatched in Europe

### UK market surges ahead

BRITAIN has been taking to professional personal computing with an alacrity that is unmatched in Europe although it is still a long way behind that of the U.S.

Demand in Britain has been stimulated for a number of reasons:

● The market has been one of the prime targets for the U.S. industry when it looks overseas. Simply, the common language is the major factor. It often means new products are launched first in the UK.

● More important, there is much more software available in the UK as it only needs relatively small adaptation—which it does not always get.

● The awareness of personal computing in business has been stimulated by the remarkable boom in home computers. One in 10 homes in the UK have a computer, with a high proportion in upper income households where there is a higher chance of people also using them at work.

● Government has stimulated awareness. It has backed the widespread use of computers in schools and has supported a number of trial office automation schemes.

Awareness has been stimulated by British television which was the first in the world to run a major series of programmes on computer literacy—which have since been shown or copied abroad.

● Britain has for many years had a particularly high level of skills in computer software, although there is still a shortage of people for the industry. It has meant there are a number of specialist software companies which have been set up to write programs for personal computers.

● This has also resulted in a number of entrepreneurial computer specialists setting up their own companies. Most have concentrated on home computers where there is a multitude of companies.

#### Successful

The best-known and most successful are Sinclair Research, founded by Sir Clive Sinclair, and Acorn, founded by two of his former colleagues, Chris Curry and Herman Hauser. Other UK companies include Oric, Dragon and Enterprise.

The UK professional market is dominated by the leading U.S. companies. Market leader is the ubiquitous IBM Personal Computer. Other U.S. companies with a strong or growing market share in the UK are Apple, DEC and Commodore.

BY JASON CRISP

One of the most successful companies in the field is British Applied Computer Techniques, based in Birmingham, is one of Britain's fastest growing companies. ACT was a well established and successful computer bureau. Its dramatic growth—turnover has been doubling each year—came with its entry into professional personal computers.

ACT began by importing under licence the Sirius computer from Victor Technologies, then a high flying new Californian company. The Sirius was one of the first computers to use a powerful 16-bit microprocessor which have since become more or less crucial for business personal computers.

The 16-bit processor gave the professional user the power and the speed to perform useful functions at work.

ACT undoubtedly benefited from the fact that IBM was too busy and too pressed, trying to meet the extraordinary demand for its PC in the U.S. This gave ACT an advantage of at least 18 months in which time it established itself as the market leader.

ACT has been quick to capitalise on that advantage. In the UK it has a strong dealer network and a significant business in supplying software for professional computers, including the PC. More important it has developed and now manufactures its own personal computer—the Apricot. This is a small, transportable machine similar to the Sirius.

Ironically, Victor Technologies, the company which was so central to ACT's initial success, went bankrupt in U.S. As a result, ACT is now buying the worldwide manufacturing and marketing outside the Americas, of the Sirius computer.

In addition, sales of the Apricot are starting in many countries including the U.S. itself where ACT has just appointed a distributor.

But competition for ACT is becoming much tougher in the UK, particularly as IBM begins to put on the pressure. Last year the two companies had an



Apple has yet to announce its portable so others have done it first. This is the British-built Xcalibur—basically an Apple II in a box with tiny monitor screen and integral disk drive

approximately equal share of the UK market. Simon Pearce at the consultants, IDC-Europa, says: "By the end of the year the IBM PC was being shipped in large volumes. It is difficult to say but on a month by month basis it probably has a 20 per cent to 25 per cent share of the market. Everyone else's share has been static."

#### Price cut

Yet a month ago IBM cut the price of its PCs across Europe up to 20 per cent. Shortly afterwards it began to allocate supplies to dealers—and its own sales force apparently—because of shortages.

There has been much speculation as why IBM would choose to cut prices just before introducing a form of rationing. One view is that IBM in common with a number of other major suppliers is keen to increase the level of direct sales of personal computers to companies.

"The trend is very markedly towards direct sales particularly because of the increase in interest by large organisations," says IDC-Europa's Simon Pearce.

This is particularly because of the importance of personal

computers as the core of office automation strategies. The suppliers want the direct contact and bulk orders from large organisations to form a building block for office automation sales.

Such a move could easily make the environment for the dealers significantly tougher. One observer reflected that just as there is an excess of manufacturers of personal computers so there are also too many dealers and a shake out is inevitable.

But the shortage of IBM PCs in Britain is also attracting the numerous plug compatible and PC look-alikes. Earlier this month Compaq Computer, the leading supplier of PC compatible computers in the U.S., announced its planned launch in the UK. (Compaq is claimed to be the fastest growing company in U.S. corporate history with sales of \$111m in its first year.)

It joins a number of others, including Columbia, Data Products, Eagle and Corona.

More aid for high-technology sectors

## W. Germany seeking to close the gap

IF WEST GERMANY is to shake off the presumed technological backwardness that is the nightmare of its planners, then few sectors will provide a closer-watched testing ground than office automation.

The electronic office, with its interlocking array of digital switchboards, microcomputers, electronic typewriters and video screens, is fast arriving in the most powerful economy in Western Europe.

But as it does, and office workers adapt to new technologies, a new familiar fear has surfaced: that Germany for all its pre-eminence in Europe, might be slipping irrevocably behind Japan and, above all, the U.S. in the advanced technologies which will create wealth and jobs into the 21st century.

Not for nothing did the sector feature in the Government plan, unveiled in mid-March, to provide DM 5bn of State aid for high technology industries, above all in the data processing and microelectronics field. But close reading of the report suggests that not all is bad.

It identifies the central weakness of West German industry in this field: micro or desktop computers, long neglected by domestic manufacturers—and with glaring consequences.

More than half of the domestic market in such computers, with a price tag of DM 4,500 (\$1,750) or upwards has been captured by just three U.S. manufacturers, Hewlett-Packard, Apple and Commodore, alone. The major West German producers, Triumph-Adler, holds only 5 per cent.

But in the two adjacent market segments, electronic typewriters and intermediate data technology, German producers have a strong position, which increasingly is being used as a springboard.

The two main home manufacturers of typewriters, Olympia and Triumph-Adler, have both had severe problems in the past. Olympia, 51 per cent owned by the long-troubled electrical group AEG, was slow adjusting to the shift from electromechanical to electronic technology, and in 1981 lost DM 113m.

Much the same has been true of Triumph Adler, which has given its parent Volkswagen no few troubles since the car group acquired its control in

BY RUPERT CORNWELL  
in Bonn

1979. As recently as 1982 VW took a DM 34m loss at its subsidiary, as well as being forced to waive DM 100m of debt repayment.

Triumph however is now showing a new vitality. Last year's sales topped DM 2bn, and as the company stretches its price range it expects to be back in profit for 1984. The company is aiming to sell over 50,000 of its "Alphatronic" range of microcomputers this year. Coupled with its high performance TA 1900 office computers, Triumph-Adler is hoping to double its share of the home market to 10 per cent within a few years.

#### New system

In addition it is offering a comprehensive planning and organisation system, called "Priz", specially tailored for the needs of senior executives, as well as the "BITBY" screen-oriented text system, which can be linked to the new teletext services offered by the German post office.

Nixdorf, the dynamic computer company built up by Herr Heinz Nixdorf, and which is floating off 20 per cent of its capital, is another growing force on the West German office equipment scene, through its wordprocessing and systems computer systems. It is aiming to double its sales and create 10,000 new jobs over the next four years.

Siemens, which leans instinctively towards large systems projects such as factory automation, is also concentrating increasingly on office automation, from its natural starting point of the telephone. The company has on the market its EMS 5500 Office system. It is planning to merge its private

telecommunications business with its computing division to mount a still more attack in the sector.

But all agree that office equipment is an area where the small nimble company has major advantages over heavier-footed larger corporations, in grasping opportunities in a fast changing and highly competitive market. And this issue goes to the heart of the present self-questioning over Germany's ability to win back high-tech ground lost not only to the Americans and Japanese, but in some fields to the British and French.

Rightly or wrongly, Germany is not seen as friendly territory for the small outfit, for the aggressive entrepreneur with a good idea, but little capital of his own. Rather, the image the Germans themselves propagate is one of a staid but by no means unambitious, founded on thoroughness, but instinctive caution and orthodoxy as well. These latter qualities have proven out of the economic miracle of the post-war decades. They have helped endow the country with an imposing superstructure of massive banks and corporations. They have, however, militated against risk taking, the conventional view runs.

In fact, venture capital funds are now starting timidly to appear. Computer experts are beginning to break away on their own, setting up their own companies, especially in the software field. Another pointer to a new vitality is the sell-out success of a recent DM 300m micro-electronics application programme sponsored by the Government. About half the applicants were new companies, founded within the last 18 years. Above all, as the latest DM 5bn programme and the acres of newspaper articles on the issue of technological backwardness show, the country has woken up to the risk.

The combination of this new awareness, the presence in Bonn of a Government committed to rolling back the frontiers of bureaucracy and the state, and the knowledge that huge profits are the prize of success in as fast growing a sector as office equipment, suggests that West Germany may overcome the challenge sooner than some suspect.



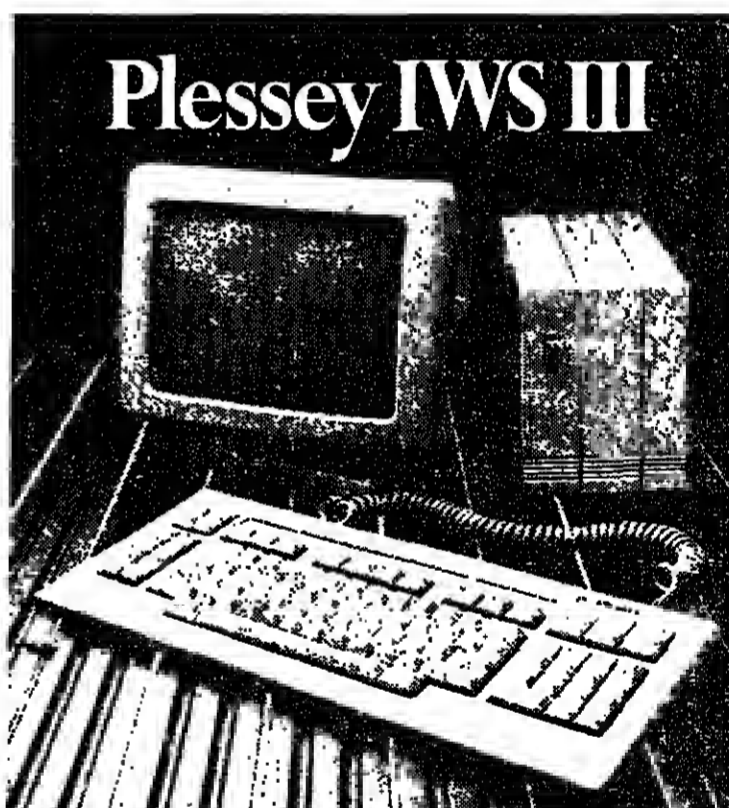
### This month we give you a hand with integrated software.

This month's magazine includes a handy 14 page guide to integrated software. We explain what it is, how it helps the businessman and what software is available.

We also check out the new touch screen Hewlett Packard computer and review two portables, the Grid Compass and the Sharp PC-5000. And we look at the business potential of six popular home computers.

Plus lots more. All in May's Practical Computing. **Practical Computing** At work. At home.

# Give it half a chance and it'll take over your whole business.



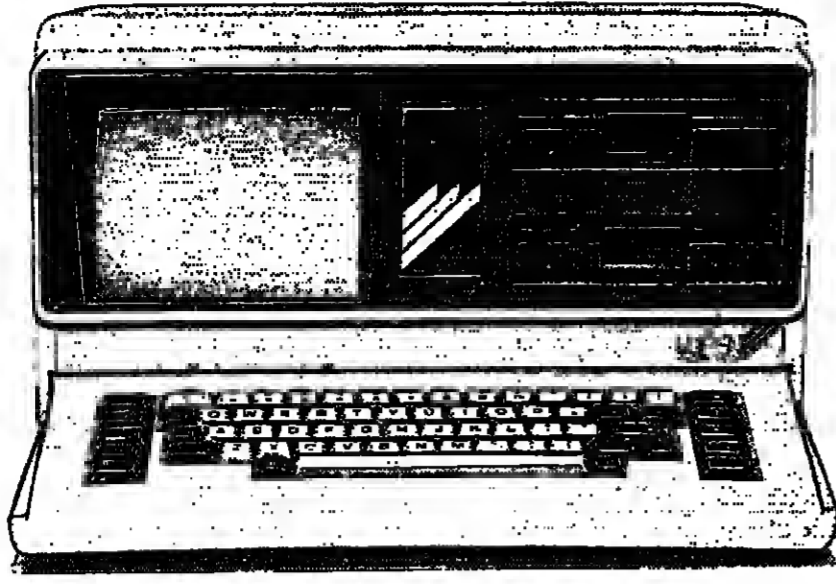
## Plessey IWS III

The Plessey IWS III is ambitious. On its own—as a superior workstation or business microcomputer—it handles CP/M 86 and MS-DOS version 2, with ample software, and Unix to come. In a cluster arrangement for any office department, it's truly a willing worker. And it shares its resources readily with low-cost terminals. For inter-office or inter-site text preparation and data communications—including graphics and electronic mail—it's impressively efficient, with mono or colour monitors. If you've a digital telephone exchange, the IWS III can even access IBM, ICL and Digital computers—and private Videotex and Ethernet. And the IWS III is ready to go public when you are. Because it can access Packet Switching Services, Telex, PSTN, Prestel—and Teletex when that's available. Plessey IWS III. Be warned. It wants to run your office! To find out more, contact the Plessey office nearest you. Plessey Communication Systems Limited, London (01) 251 1254, Bristol (0272) 279185, Manchester (061) 228 2834.



PLESSEY and the Plessey symbol are Registered Trade Marks of The Plessey Company Ltd





## At £1,000\* the Wren is the desk-top that's not desk-bound.

It's all well and good to have a desk-top system. But what do you do if you want to work away from your desk.

The Wren Executive System is the perfect desk-top. Because it's portable. No other small computer packs in so much for such a price. Simply add up its strengths and you'll see just what we mean:

- Full range of Perfect™ business software including financial planning, word processing and sophisticated filing systems.
- Executive Desk Top System includes electronic diary, notepad, calculator, time clock and random access card index.

• British Telecom approved on-board auto-dial modem and communications software for direct access to Prestel, Micronet 800, and other private viewdata systems.

- Built-in 7" amber screen. Twin disk drive.
- Built-in interfaces includes RS232 Winchester disk drive and external colour monitor.
- 3 months free subscription to Prestel and Micronet 800.
- 64K bytes of memory.
- Fully portable.
- Made in Britain.

No other small computer offers you more...so why settle for less.

**WREN**  
EXECUTIVE SYSTEM

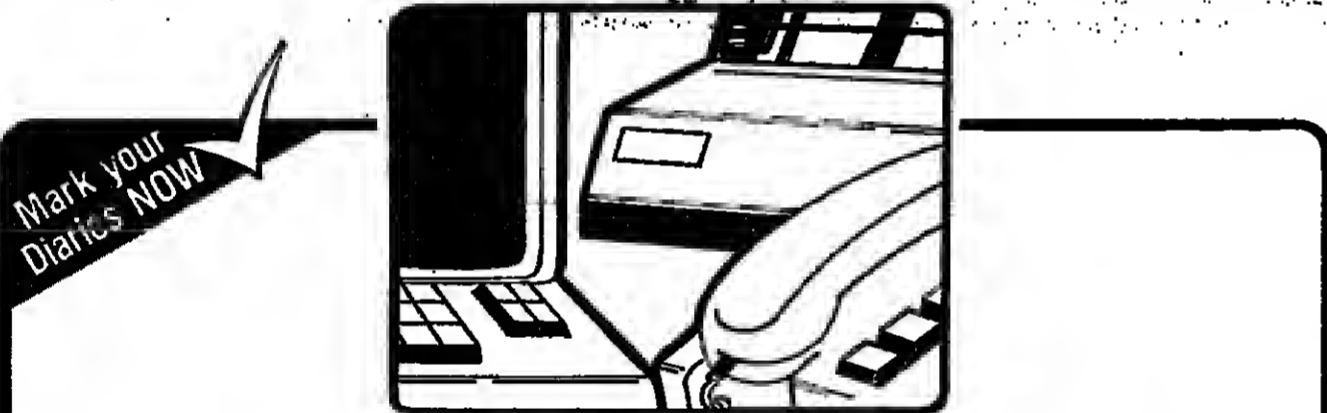
Distributed by:  
**Prism Business Systems Ltd**  
Telephone: 01-253 2277

For full details telephone us on 01-253 2277 or complete this coupon and return it to Prism Business Systems Ltd, 18-29 Mora Street, City Road, London EC1V 8BT.

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
Telephone \_\_\_\_\_ F116/4

Carry the company in your hand not on your shoulders

The Wren is designed by Transcom Computers Limited, Perfect Software™ is a trademark of Perfect Software Inc. Micronet 800 is the trading style of Telemat Limited and British Telecom. Executive Desktop is the copyright of Quantec Systems and Software Limited. Prestel is the trademark of British Telecom. \*All prices exclude VAT.



## The Electronic Office: Threshold of a new era

A date for your diary - the Financial Times high level meeting on the Electronic Office in London on 5 & 6 June, 1984. This conference will focus on the great changes taking place in the professional office and the accelerating pace of office automation. Leading experts from the UK, Europe, USA, and Japan will examine the implications and challenges that this new momentum will bring for governments, manufacturers and their customers alike.

speakers will include:

**Mr Paul Strassmann**  
Vice President Systems Group,  
Rank Xerox Corporation.

**Mr Elserino Piol**  
Director Strategy and Corporate  
Development, Ing C,  
Olivetti & C, SpA.

**Mr Hirokazu Negishi**  
Senior Research Scientist,  
Canon Inc.

**Mr Michael O'Connor**  
Head of Office Systems Division,  
The Central Computer and  
Telecommunications Agency.

**Mr Robert Ryan**  
President, ITT Dialcom, Inc.

**Dr Richard Horsnell**  
Managing Director, Philips  
Electronics Business Systems.

For full details of this 1984 programme, please return the application form.

### The Electronic Office

Please send me further details of 'The Electronic Office' conference.

**FT** A FINANCIAL TIMES INTERNATIONAL CONFERENCE

To: Financial Times Limited, Conference Organisation, Minster House, Arthur Street, London EC4R 9AX. Tel: 01-621 1355 Telex: 27347 FTCONF G

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Tel: \_\_\_\_\_ Telex: \_\_\_\_\_

*Spillio 115*

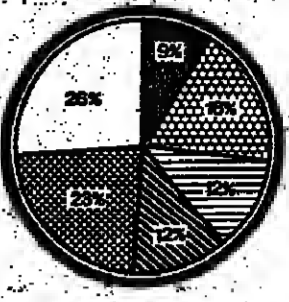
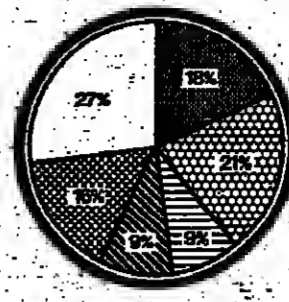
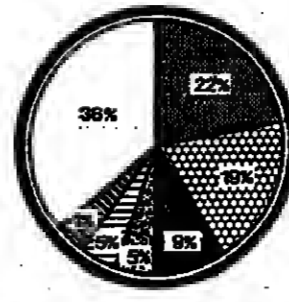
## THE DESK-TOP REVOLUTION 18

MARKET LEADERS' SHARES - Western Europe, units shipped to business/professional market over \$1000 per unit

1982 - 203,000

1983 - 280,000

1984 - 426,000



Legend: COMMODORE, APPLE, TANDY, OSBORNE, OLIVETTI, ACT/SIRIUS, IBM, OTHERS

Italy: Olivetti anticipates big sales increase in late 1980s

## Micro market lags behind

DESPITE the presence in Italy of Europe's leading data processing equipment company-Olivetti-the Italian market for desk-top microcomputers is still lagging a couple of years behind developments in other major industrialised European countries.

This is not surprising: Italy has traditionally been slower in nurturing new technologies than other countries such as West Germany and France. It also lacks a sufficient degree of expertise, trained personnel and the computer culture which is more advanced in other countries.

On the other hand, the past two years have seen rapid growth in Italy's personal computer market. The market is still relatively small - some 100,000 personal computers had been sold in Italy by the end of last month. Of these only around 30,000 to 35,000 desk-top models could be called professional. The others were for home use.

That means that at an average price of £15m per professional model, total Italian sales to business users have been around £1.5bn (\$93m). But the growth has been fast: two years ago the number of desk-top computers sold in Italy was negligible. By the end of 1982 the total was around 30,000 (both home and professional).

At the end of last year the number sold had more than doubled to 70,000 and since the beginning of 1984 a further 30,000 have been sold, bringing us to the current estimate of 100,000 machines. By year-end, the total expected to reach 150,000, of which some 40,000 will be professional models.

### Prospects

"It is a slow process now. We have had very quick expansion in two years, but before we can resume this pace in Italy we must educate the businessmen and show them what automation can do. I don't think we will see great growth for another year, unless one manufacturer of personal computers and other sectors of the economy have been remarkably eager to make use of personal computers. Prominent among these sectors are banking and insurance, retailing and other service industries. Giorgio Armani, the Milan-based fashion designer, is now using a personal computer to keep track of orders and changes in design.

By far the largest force in Nordic electronics is the I.M. Ericsson group. While its international standing is rooted in public telecommunications (it says its Axo digital switching system has a 13 per cent world market share) its hopes for future growth are pinned squarely on its information systems division. The division, which covers integrated office automation, data processing and voice and data transmission, accounted for 30 per cent of total group sales of Skr 25.4bn in 1983.

Already strong in the terminals business, the unit claims a 15 per cent European market share with its Alfapack system. The system has a 50 per cent market spread in Sweden, officials say. Ericsson recently introduced an MD 110 Private Automatic Branch Exchange (PABX) digital voice and data exchange after very heavy development costs. Despite a slow start, it is confidently predicting it will secure "a large chunk" of a total world market estimated at U.S.\$3.5bn. The system will be marketed in North America by Honeywell, after a recent agreement.

Ericsson has been concentrating heavily in the bank automation sector, where it has an especially strong position on the Swedish market despite some recent setbacks. It introduced a distributed data processing network which can be linked with mainframes in large organisations. Focusing on the Nordic market, but also active in France and Spain, it has taken in orders totalling over Skr 1bn in the past 18 months. A business version of this so-called system 2000 with software for bookkeeping, word processing and system control (among others) is being aimed at the large and medium-sized users, again mainly on the Nordic market but also to a lesser extent in Europe. "The order book is filled and we are running at capacity," says Mr Rolf Ericsson, Ericsson Information Systems president.

to clear a cheque and many minutes to get the attention of a dawdling clerk, personal computers are being used increasingly.

Olivetti reckons that its share of the Italian market in personal computers last year was 35.9 per cent, a rather precise figure in a market where others are reluctant to hazard a guess.

IBM is just behind Olivetti and then there is the traditional list of Apples, Commodores, and other well-known makers of personal computers fighting for a piece of the pie. From the UK, Act has recently signed an agreement to sell 2,000 of its Apricot models in the next year.

But what is the philosophy of office automation in Italy? Few individuals are in a better position to discuss this subject than Sig Elserino Piol, Olivetti's joint managing director in charge of strategy. Sig Piol first of all dismisses the phrase "office automation". "I don't like the words. I would prefer to talk about office work stations," he explains.

Olivetti's view is that every white collar worker, from secretaries to managers, needs adequate information tools. The Olivetti version of such tools is found in a work station composed of various components, ranging from a telephone and related communications equipment, electronic typewriters and personal computer to integrated terminals.

"There will in future be fewer layers of management. A flatter management structure as a result," continues Sig Piol. But the real problem is building a network inside a company. "This is where the big battle is taking place among manufacturers. IBM, for example, is going to try to build up the standard for exchanging information and American Tele-

### PERSONAL COMPUTERS IN EUROPE

Country market shares-1983 (%), for personal computers of \$1,000 plus

	UK	W. Germany	France	Italy
Apple	17	17	20	16
Commodore	17	18	4	16
IBM	15	15	14	9
ACT/Sirius	15	10	6	-
Olivetti*	-	7	7	34
Tandy	5	6	4	-
Triumph Adler	-	6	-	6
Bull	-	-	3	-
Digital (DEC)	5	-	-	-
Hewlett Packard	5	-	-	-
Leonard	-	-	4	-
Osborne	5	-	-	-
Sharp	-	6	-	-
SMT	-	-	6	-
Total units	85,000	54,000	53,000	32,000

\*Olivetti and Logabax in France. Source: IDC-Europe

phone & Telegraph, Olivetti's new global partner will build a standard for communications.

"One of the major reasons why we are in an alliance with AT & T," notes Sig Piol, "is the need to co-ordinate work stations and telecommunications. This is where Olivetti needs help." Last December AT & T paid U.S. \$260m to buy 25 per cent of Olivetti (it has an option to buy up to 40 per cent in four years' time).

Olivetti will market AT & T products in Italy, and AT & T has agreed to buy 100,000 Olivetti work stations, for US\$200m this year, to be sold in the States.

### Functions

Sig Piol claims that "the most ubiquitous work station will be a personal computer and a telephone." He says that for the next 10 to 20 years the work station will be based largely on these two components but a number of employees will still not take advantage of all the functions of a personal computer, he adds as a caveat.

How about the Italian market? "The real question in Italy is for medium- and large-sized companies. What you find now in Italy are different stages of automation. The leading-edge companies like Fiat and Alitalia will move fastest but fewer leading-edge companies in Italy are using personal computers than in Germany."

Sig Piol maintains that there exists no technological gap between Italy and the rest of the world (although a number of customers criticise Olivetti's M20 personal computer model as not offering adequate software).

"The gap is in quantitative terms. If you consider the market in terms of sales and how diffused the computers are, then we are two to three years behind in Italy."

Olivetti, however, reckons that in a few years there will be much increased sales in Italy and in Europe. Sig Piol is looking for an average growth rate of 30 per cent a year for the late 1980s.

He notes that Olivetti is trying to strengthen its position in Europe, with a new line of personal computers, with the AT & T alliance and with plans for a chain of Olivetti personal computer retail outlets in several countries in Europe. "We are strongly convinced that we can be number two in personal computers in Europe. We take it for granted that IBM will lead the market," comments Sig Piol.

The general hope in the Italian market is that professional desk-top models will soon begin to sell as well as home models. Looking ahead, manufacturers hope that it will not just be the Fiat, Benetton, Montedison, Alfa Romeo and banks leading-edge companies in Italy using personal computers. For the time being Italy remains behind.

Sweden launches subsidy plan to boost microprocessor sector

## Nordic suppliers confident

DESPITE THEIR relatively small size, Scandinavia's electronics manufacturers are confident they will be able to hold their own against the giants in the increasingly competitive personal computer and office automation scene, partly because of their strong roots in the Nordic market.

By far the largest force in Nordic electronics is the I.M. Ericsson group. While its international standing is rooted in public telecommunications (it says its Axo digital switching system has a 13 per cent world market share) its hopes for future growth are pinned squarely on its information systems division. The division, which covers integrated office automation, data processing and voice and data transmission, accounted for 30 per cent of total group sales of Skr 25.4bn in 1983.

Already strong in the terminals business, the unit claims a 15 per cent European market share with its Alfapack system. The system has a 50 per cent market spread in Sweden, officials say.

Ericsson recently introduced an MD 110 Private Automatic Branch Exchange (PABX) digital voice and data exchange after very heavy development costs. Despite a slow start, it is confidently predicting it will secure "a large chunk" of a total world market estimated at U.S.\$3.5bn. The system will be marketed in North America by Honeywell, after a recent agreement.

Ericsson has been concentrating heavily in the bank automation sector, where it has an especially strong position on

the Swedish market despite some recent setbacks. It introduced a distributed data processing network which can be linked with mainframes in large organisations. Focusing on the Nordic market, but also active in France and Spain, it has taken in orders totalling over Skr 1bn in the past 18 months. A business version of this so-called system 2000 with software for bookkeeping, word processing and system control (among others) is being aimed at the large and medium-sized users, again mainly on the Nordic market but also to a lesser extent in Europe. "The order book is filled and we are running at capacity," says Mr Rolf Ericsson, Ericsson Information Systems president.

The group's acquisition last year of Ficat, the large Swedish manufacturer of intelligent typewriters and minicomputers, was behind fully 10 per cent of Ericsson's 1983 sales growth. "The key words for the future are communications and ergonomics," says Mr Ericsson. Exploiting its experience in the telecommunications field, Ericsson will focus its strategy on large systems, for example, very large private packet switching networks for integrated data communications. Mr Ericsson explains. The group is emphasising the ergonomic aspects of its hardware design and "user friendly" software packages.

Sweden has one of the world's highest densities per worker of office automation products, as well as bank electronics, post office data exchanges, and CAD/CAM technology. Yet, it has been forced to import some 80 per cent of its microchip requirements, with the remaining 20 per cent being manufactured by two component companies (HAFCO, owned by ASEA, and RIFO, an I.M. Ericsson subsidiary).

The Government, as part of an intensive industrial development strategy announced in February, included an Skr 71m five-year subsidy programme to build up the domestic industry in advanced microprocessors.

The move is set against the background of similar but larger programmes in Britain, West Germany, Italy and France.

The development aid directed mainly at HAFCO and RIFO will be aimed at "springing" products rather than standard microchip production. The world market for specialty chips is expected to grow from the present 20 per cent (of all microchip production) to over 80 per cent within the next six years, the Government says.

Sweden's overall electronics output, Skr 50bn last year, made up over 70 per cent of the Nordic total. The region's second major force is Nokia, the industrial conglomerate which is Finland's largest privately-held company. The group recently purchased the formerly state-owned Swedish Luxor group, adding consumer electronics to its data processing and information systems base, doubling its annual electronics sales to

some U.S.\$500m, and broadening its market base in Sweden. It spent some U.S.\$72m last year on product (mainly software) development. At the recent Hannover fair, the group displayed a multi-function system allowing parallel communication and processing at a work station, with a split screen monitor, its office automation line is based on a workstation which can stand alone, be combined with local networks, or larger computers.

Nokia's strategy remains focused mainly on the Nordic region. It claims a 45 per cent market share in Sweden with its microcomputer, mainly intended for small and medium-sized users.

At home in Finland it says it has overtaken IBM on the data processing market particularly for banks. Nordic Data, the small but rapidly expanding Norwegian manufacturer with 1983 sales of Nkr 870m, recently introduced a new personal computer as part of an office automation line aimed mainly at domestic government and industrial buyers and to a lesser extent similar users in the rest of Scandinavia. It has had particular success with its Notos software packages. The group's international growth is rooted mainly in scientific and research-related systems.

He notes that Olivetti is trying to strengthen its position in Europe, with a new line of personal computers, with the AT & T alliance and with plans for a chain of Olivetti personal computer retail outlets in several countries in Europe. "We are strongly convinced that we can be number two in personal computers in Europe. We take it for granted that IBM will lead the market," comments Sig Piol.

The general hope in the Italian market is that professional desk-top models will soon begin to sell as well as home models. Looking ahead, manufacturers hope that it will not just be the Fiat, Benetton, Montedison, Alfa Romeo and banks leading-edge companies in Italy using personal computers. For the time being Italy remains behind.

Sweden's overall electronics output, Skr 50bn last year, made up over 70 per cent of the Nordic total. The region's second major force is Nokia, the industrial conglomerate which is Finland's largest privately-held company. The group recently purchased the formerly state-owned Swedish Luxor group, adding consumer electronics to its data processing and information systems base, doubling its annual electronics sales to

some U.S.\$500m, and broadening its market base in Sweden. It spent some U.S.\$72m last year on product (mainly software) development. At the recent Hannover fair, the group displayed a multi-function system allowing parallel communication and processing at a work station, with a split screen monitor, its office automation line is based on a workstation which can stand alone, be combined with local networks, or larger computers.

Nokia's strategy remains focused mainly on the Nordic region. It claims a 45 per cent market share in Sweden with its microcomputer, mainly intended for small and medium-sized users. At home in Finland it says it has overtaken IBM on the data processing market particularly for banks. Nordic Data, the small but rapidly expanding Norwegian manufacturer with 1983 sales of Nkr 870m, recently introduced a new personal computer as part of an office automation line aimed mainly at domestic government and industrial buyers and to a lesser extent similar users in the rest of Scandinavia. It has had particular success with its Notos software packages. The group's international growth is rooted mainly in scientific and research-related systems.

David Brown in Stockholm



THE DESK-TOP REVOLUTION 19

David Marsh on the French craze for information technology  
**Micro-mania hits France**

TAKE a market in full growth after several years of lagging behind other European countries. Add the presence of all the major American multinational, a string of government campaigns to boost product penetration, plus still powerful influences from domestic manufacturers in certain areas—and you have a picture of the French market for office data processing and communications equipment, more often than not described as a "jungle."

Eighteen months after micro-computer mania first hit the U.S., France last year was caught up in the craze for information technology which swept through Europe.

Although the popularity of computers in the home and the spread of retailing networks remain significantly lower than in Britain and West Germany, growth rates in the industry are comparable with the surge in demand recorded elsewhere. Last year 200,000 "family" computers and 30,000 professional micros were sold in France—more than the cumulative total of all the preceding years.

With the IBM personal computer, launched in Europe at the start of the year, selling less well in France than in other countries, other professional micro-electronics manufacturers—for the moment at least—are holding their own in France against the world's dominant computer company.

**Bidding**

Apple, for instance, though hard-hit worldwide by IBM's PC, sold 30,000 units in France last year against an estimated 7,000 to 8,000 for the newly-introduced IBM model.

IBM, whose French subsidiary has double the turnover of Bull, the nationalised French computer group, holds 50 per cent of the overall domestic computer market, and has been bidding strongly—as elsewhere in Europe—to break into telecommunications.

But in the personal computer business, IBM in France has yet to assert its customary dominance over the market—although that step may take place this year as the U.S. multinational brings its French sales network more fully into operation. Bull, the perpetual No. two in the domestic race with IBM,



In the personal computer sector, IBM in France has yet to assert its customary dominance over the market. Seen here is the IBM PCjr equipped with diskette drive and disk operating system 2.1 in use at home.

in spite of years of government support, still claims to be in with a chance of tweaking the giant's nose in fast-moving markets for computerised business information systems. Pointing to its integrated office data processing and communications systems, Scribe, being installed for the French Finance Ministry, M. Jacques Stern, the Bull president, says that even IBM has been caught out over the past few years in its strategy for matching computers with telecommunications. And he says the pace of market change gives smaller rivals a chance to secure strong positions in specialised slots.

With IBM standards clearly holding the data processing sector in sway, no company active in France hopes to do more than simply carve out niches in the market. But they can be profitable for all that, as small specialised micro-computer companies such as Goupil, Leonard (owned by Crensol Loire) and Logabax (majority-owned by Olivet) after its cash crisis-induced restructuring in 1981) have shown over the past year or so.

All the hardware companies, as well as France's computer service groups, which are among Europe's leaders in this field, have drawn benefits from an information technology market estimated to have grown by 20 to 25 per cent to FFr 40bn last year.

Information technology is easily the most buoyant part of France's overall electronics and electrical sector which, according to the industry's federation,

turned over FFr 180bn in 1983. Other big U.S. companies present in France—including Digital Equipment, Burroughs and Hewlett Packard—have announced improved French results for 1983 and have stepped up their commitment to the domestic market.

**Purchases**

Digital Equipment, for example, is spending FFr 300m building a production plant at Valbonne in the south of France; Hewlett Packard, along with Wang and Apple (the latter two have no manufacturing presence in France) have announced they are making more purchases of French components in order to increase the "Frenchness" of their products.

Foreign computer makers are clearly taking a heat out of IBM's book in confirming their intention to play a direct domestic role rather than simply supplying the market with imports. IBM, with its four French plants, two research laboratories, FFr 25bn in turnover—and tax payments which make the company France's largest taxpayer—has made itself an indispensable economic partner for the French Government.

Similarly, smaller British companies active in the home and educational computer business—led by Sinclair, Acorn and Oric—have found that the French market can be extremely welcoming provided the right domestic partners can be found. Acorn, for instance, has explored teaming up with

Thomson—which makes what is for the moment France's most successful small microcomputer, the T07—for an assault on the schools sector. The Government at the end of last year unveiled plans to boost the number of schools computers to 100,000 by 1988. The number at present is an embarrassingly modest 11,000 or so—and the Government has promised tenders will be open to foreign as well as French companies.

There have also been recent signs of a wind of change in France's traditionally protected market for computer equipment in Government administrations and nationalised companies. This follows a loosening of bureaucratic procurement procedures set up during the 1970s to support Bull and other domestic suppliers.

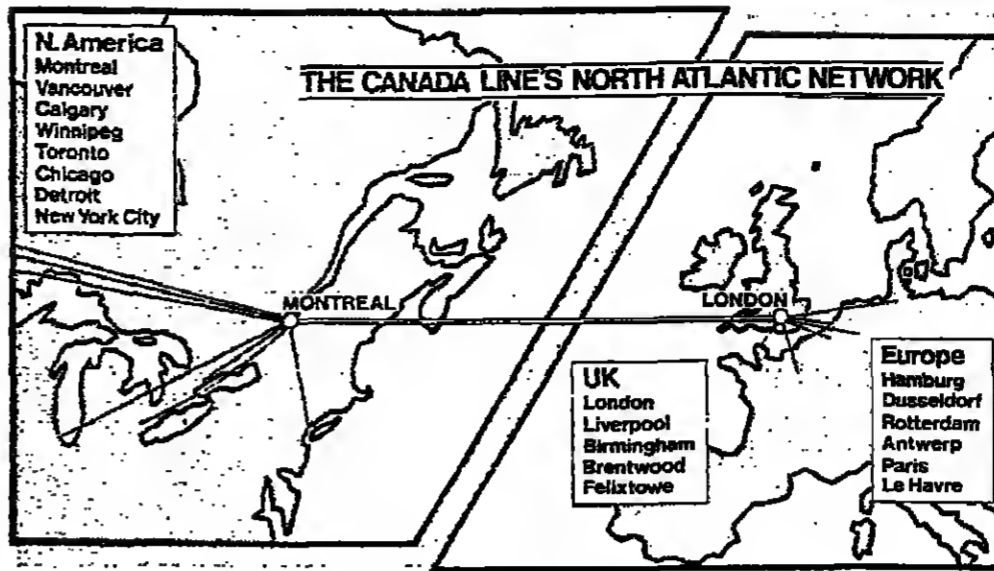
The Government now realises protectionist policies actually cost the taxpayer dearly—the celebrated affair of the Banque Nationale de Paris being forced to buy Bull rather than IBM equipment just after the 1981 change of government was a case in point—and impeded necessary adaptation to competition.

As a result, domestic computer groups are turning ever more frequently to foreign collaboration agreements to boost their sales range. Leonard has teamed up with Thorn-EMI, Thomson with Fortune and Eagle of the U.S. and Bull with Ridge and Convergent, also from California.

That might not please the industry purists who once insisted on the need for an all-French computer industry. But it is giving computing customers what they want—which is what the French Government now seems to want too.

**PERSONAL COMPUTER MANUFACTURER REVENUES**

Western Europe sector/ professional sector: figures in \$m	1982	1983
	726	1,063
	1,446	1,861
	2,376	2,985
	3,623	



CASE STUDY: CANADA LINE

**More efficient network**

LAST YEAR the chairman of Canadian Pacific Steamships, Harvey Romoff, saved his company a lot of postage—he sent his Christmas card to staff by electronic mail.

Four hundred employees at 24 offices, in seven countries read their boss's Yuletide greetings on their desk-top screens. He had even drawn a little Christmas tree complete with flashing lights.

His graphic attempts were made possible by the freight-carrier's north Atlantic computer network that provides a range of office automation facilities like word processing, spread sheets, financial modelling, graphics, traditional transaction processing and electronic mail. The company is now called The Canada Line after a merger this January with the Darcian interests of Maritime Beige. It has an annual turnover of \$2,000m and offices in the UK, the U.S., Canada, Belgium, the Netherlands, France and Germany.

Its business is to ship containers across the north Atlantic. It demands good communication and administrative efficiency; a mis-directed telex can in the worst instance steer a batch of containers to the wrong country. Good communications saves money.

which made their decision making difficult. They employed Graham Brown, now a consultant, to improve their efficiency.

"When I went to CP Ships one of the first things people said to me was: 'We're putting all this information into the computer but we can't get it out.'"

He formed a team of four people to create a new system. An analysis of the company showed that it was communications intensive but it lacked a good communications network. Telephones, for instance, are not the best tool if Hamburg wants to talk to Toronto, 10 hours behind.

At the time the traditional method of computerising a company was to get machines to do the manual work faster. "I took the view that flow-charting the current procedures only helped embalm the existing organisation and methods in electronic aspic," says Mr Brown.

Objectives He set out to identify which corporate objectives could be helped by an information system. In this way the configuration of machines would fit in with the company philosophy, instead of the reverse which is often the case when systems are installed.

processors, it helped him in his later choice of supplier. To introduce his ideas and the forthcoming system to the staff, Mr Brown set off on a tour of the company's offices: "I went there to see and to be seen; you can't do analysis sitting in an office."

"It's important to talk to the people doing the work and find out what they want from a system. I was also trying to merchandise the benefits and stamp a few ideas into their minds. We didn't talk about technology, just communication."

From his visits emerged an implementation strategy and he chose to install electronic mail first, because he says it gives people a sense of belonging to a larger group. The data and word processing functions can be added later.

While Mr Brown was travelling, two team members were looking at equipment and suppliers. "Traditionally you choose kit, having based your decision on detailed technical evaluations before running a final check on the reputation, financial stability and engineering organisation of the vendor. We did it differently."

The team produced a rough list of office automation vendors able to offer service back-up in the company's offices. To prevent the traditional mistake of providing a solution before finding the problem, the team worked out the software requirements before looking at packages on offer.

project simple and sought a single source for both hardware and software—an attitude criticised by many consultants. "But it saves finger-pointing when things don't run according to plan," says Mr Brown.

The list of suppliers was further shortened after initial contractual discussions and after their financial credibility had been checked. Mr Brown also insisted that they share his view of the system and were able to demonstrate the equipment using his data.

"In the end you're buying a company, not this particular product. You want to know that it'll be around long enough to support the system and upgrade it."

"I think there is one fundamental attitude to obey when buying equipment: the supplier has to show it working. And if you accept this, then, with the speed of technological change, the kit you buy is inevitably going to be obsolete."

He also insists on a trial working period—for which you pay—with your choice of supplier. This is based on the experience of having to cancel his original order because the well-known supplier failed to give the necessary back-up.

Such decisions are extremely difficult and fear of ridicule often forces people to stick with a system they know is wrong. Mr Brown emphasises the need for a mature manager to be in charge of the operation.

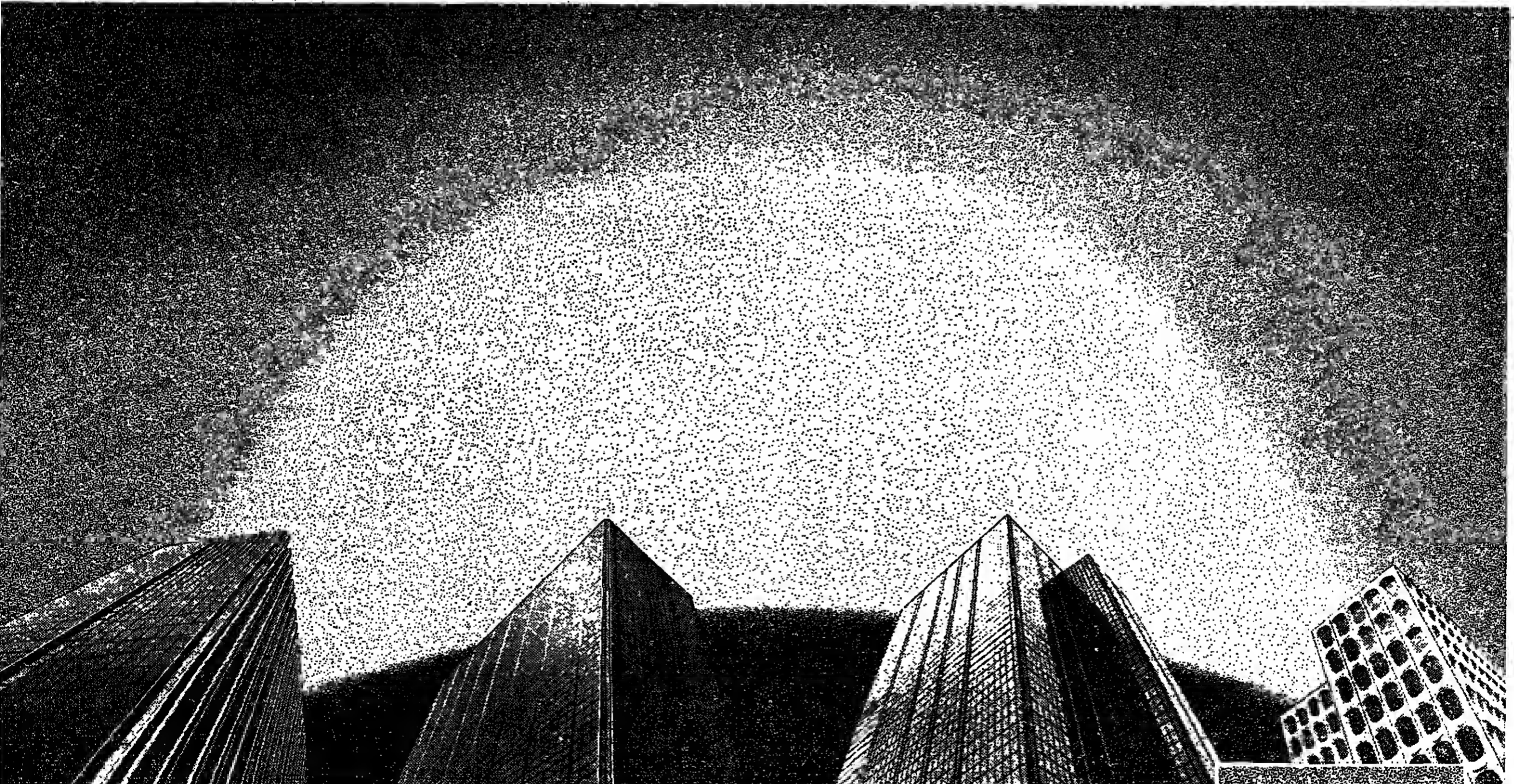
**Justified**

Hewlett Packard finally won the order which was then worth about £100,000 and has since risen to over £1m. They supplied three HP 3000 mini computers, 70 HP 125 personal computers, and 90 HP 28/24b terminals which were distributed to the different offices.

The network has justified itself. North American telecommunications costs are down 66 per cent, which is worth about £8100,000. And the volume of traffic is up. Transportation businesses expect to spend 15 per cent of revenue on information systems. The Canada Line spends 1 per cent.

Personal computers have been integrated into the network instead of threatening to break it up. The transmission of the access to data is crisper since, subject to control, the system is accessible from any terminal. In fact, one executive has swapped his fruitbowl in the dining room for a terminal. He is now in contact with the business at all times. Some executives, of course, prefer fruit.

Peter Knight



**HERMES I - Your key to the integrated office.**

You may have read a lot about the integrated office, but have you seen one yet? The problem is, even if one manufacturer could supply you with all the fully integrated business machines that you need now and in the future, would your office integrate with everyone else's? Only with HERMES I is this possible. HERMES I is a fully integrated universal

data transfer system. A gift from the gods, that will fully meet the internal, national and international telecommunication requirements of the corporate network. HERMES I combines data transmission, terminal interfacing, communications control and electronic mail in a single business facility. Specialised terminals and telecom

systems are linked despite differences in data format, transmission speed, codes, protocol or input/output characteristics. HERMES I makes it possible to reduce significantly the communication system costs while increasing efficiency and productivity of the communications function. HERMES I reflects 101 years of communications operations backed up by

the expertise of one of the world's largest communication entities. The day of the integrated office has arrived, with HERMES I. ITC Commercial Cable Company, Melbury House, Bastwick Street, London EC1V 3PH. Telephone 01-251 1577. Telex 299934.



→ LONDON ↔ COMPUTER ↔ PARIS ↔ TELEX ↔ ROME ↔ WORD PROCESSOR ↔ FRANKFURT ↔ TELETEX ↔ STOCKHOLM ↔ TELEPHONE ↔ NEW YORK ↔ COMPUTER ↔ BRUSSELS ↔ TELEX ↔



# THE DESK-TOP REVOLUTION 20

The contest to capture the personal computer market has begun in earnest

## Two main rivals jockey for lead position

THE "desktop revolution" began in earnest when large companies bought professional personal computers in massive numbers.

In 1982, for example, Connecticut Mutual Life Insurance Company, a U.S. blue chip insurance company boasting \$6.5bn in assets, ordered 1,000 IBM PCs as the basis of its operations and sales information system.

It was a massive order for what was at that time, a very new machine.

But the habit was clearly catching. Within weeks of the launch of Apple's "Macintosh" desk top computer, the leading accountants Peat, Marwick, Mitchell and Company had placed orders for 3,500 of the controversial device. And with 40,000 Macintoshes sold in the first 60 days after launch, there is no reason to doubt Apple chairman Steven Jobs' claim: "Demand at present is several times more than the number we can make."

And it has to, if Apple is to live up to its reputation as the only company which will be able to live with IBM in the personal computer market. At a Financial Times conference last year, for example, Ms Jean Yates of Yates Ventures, a U.S. based personal computing consultancy predicted: "The hardware winners will be Apple, IBM, one or two low-cost manufacture-orientated vendors, and perhaps one innovative, major data processing shop which is able to make the transition."

### Analysis

It is an analysis with which Mr Jobs agrees.

"In the future I would expect IBM to have around 20 to 30 per cent of the total market and Apple to have about the same," he says.

Now Apple can claim credit for starting the personal computer, and therefore the desktop revolution, but these days to achieve and maintain that share against the marketing muscle of IBM would be a considerable feat.

It suffered badly in 1983 when despite doing over \$1bn worth of business it lost market share heavily to IBM. Its Apple II and Lisa computers have never fulfilled their promise and it has seemed increasingly a one product wonder.

BY ALAN CANE

So Apple has to justify its faith in its view of the office of the future as exemplified by the Macintosh, perhaps the most talked-about personal computer in recent years.

Jobs and Apple co-founder Stephen Wozniak designed and built their first machine in a rented garage, excited that they could cram an entire computer onto a single printed circuit board at a cost so low that it could be owned by ordinary people.

"Our ideas haven't changed at all," Mr Jobs said in London earlier this month. "We are still concerned with the interaction between the user and our computer."

"When you consider that nobody in personal computers has more than about 5 per cent of their possible market you can see that we have not really made a dent yet."

The market he is anxious to address is the majority of people who are either afraid of computers or have no time or inclination to work through massive instruction manuals. "When we designed the first Apple, it never really occurred to us that people could be intimidated by computers or by 400-page manuals."

So the pure strain of Apples, the Apple II, IIe and so on, gave way to the new hybrids, Lisa, and now Macintosh.

Both of these machines leaned heavily on the ideas of a group of researchers based at the Xerox Palo Alto research laboratories. It was they who first came up with the idea of little pictures or "icons" on the screen to represent activities—a filing cabinet to file memos, for example, they who first thought of picturing the executive's desk as a series of simultaneous

"windows" on the screen. They who first developed the "mouse," a palm-sized box on rollers with a button on the top which could be moved around on the desk top to move a pointer on the computer screen.

What has Apple added to the Xerox concept? "We figured out the best way to implement these techniques," says Mr Jobs. "The interface we have built between the user and the computer is better. We were able to stand on Xerox shoulders and see a little further."

In the immediate future, Mr Jobs sees two principal areas for Apple to address, with IBM as its principal competitor in each.

First, the market for sophisticated machines costing up to \$1,500—chiefly the high end home market and the educational market from kindergarten to age 12 or so.

Apple offers the Apple II in its various forms for this market; the IBM reply is the PCjr, a machine still not available in this country.

But the PCjr is, by all accounts, doing badly. It is likely to be revamped and relaunched. According to Mr Jobs, IBM erred in limiting the capabilities of the machine so that it could not be used as a true home-and-office link and also failed to ease the paucity of educational software available in a form which could run on the machine.

The second area, for machines costing up to \$3,000, is the electronic office—productivity tools for the executive—and the electronic college. Here, the Macintosh will compete directly with the IBM PC and its clones. It has to be said that the level of innovation built into Macintosh will be of instant appeal in an educational environment in comparison with the staid and orthodox PC.

Mr Jobs sees two factors as critical for success in personal computer markets in the future.

First, effective channels of distribution. That means both dealers and mass retailers along the lines of the "store-within-a-store" concept. In the UK, for example, Apple's managing director Peter Cobb is already talking to Harrods.



Apple chairman Mr Steven Jobs—"Demand... several times more than the number we can make."

Second, software. "Without the software, you are dead," says Mr Jobs, acknowledging that software companies will not be prepared to allocate resources to projects destined for computer manufacturers who might not be in business in a year's time.

Some indication of the quality of software now being written for Macintosh is the fact that an upgraded version of Lotus Developments "Symphony" program will be available later in the year.

### Best selling

Symphony is the latest from the writers of the best selling 1-2-3 package which started the trend to integrated software. MacSymphony (to coin a title) is likely to combine spreadsheet, word processing, graphics, communications, data base management and graphical input as well as output.

What does Mr Jobs predict for the future? Certainly portability. "We'll put Mac in a box," an echo of the old Xerox "Dynabook" concept of a paper back sized machine suited for business or educational use.

There will certainly be moves towards flat screens and to desk-top machines which combine computing and voice telephony. Later in the year, Mr Jobs expects to announce an innovative

laser printer for the office. Colour for Macintosh computers is further off. The choice at the moment is between high definition black and white and medium definition colour—and for the £2,000 or so Macintosh costs, Apple settled for black and white. "We could do colour today, but it would cost \$10,000," Mr Jobs grins.

The company already designs several of its own integrated circuits and is beginning to look at microprocessor design. "The Linnos transporter is a very interesting device—it is along the right lines," Mr Jobs believes.

And there is already a new maturity, due in part to the arguing quality of ex-Pepsi Cola chief, Mr John Sculley, who took over as president and chief executive a couple of years ago, partly due to the company's confidence in its projected \$200m investments in research, development and marketing.

Mr Jobs believes that the telephone is still the only machine to have a natural home on the desk—"We are out to make the computer the second desk-top machine," he says.

But the fact is that this ambition will only be realised by Apple and not IBM if it can convince the world that Macintosh is the way of the future—and most industry watchers are reserving their judgment on that.

Few managements seem ready to accept automation without some cost justification

## Savings hard to identify

"WHEN discussing plans to acquire new technology, managers generally say that the introduction can go ahead if significant staff savings or gains in productivity will result."

"In practice, such hard justifications are rarely achieved."

BY ALAN CANE

\$1,000 per office worker on office automation equipment, that adds up to a potential of \$300m.

It adds that word processing and data processing terminals will triple from 7m to 22m in the next five years and that by 1988 some 27m electronic office devices will be installed.

By 1985, according to an analysis of 1,400 manufacturing companies 100 per cent of secretaries will have workstations, 90 per cent of professionals, 70 per cent of managerial heads and 13 per cent of presidents.

### Sun shining

With manufacturers at last able to provide products—chiefly in the form of the desktop computer—which can provide the functions needed in a true professional workstation, the sun seems to be shining at last on the office automation business.

What of Europe and, in particular, the UK? The Eos study shows that most middle sized and large companies have installed limited office automation including word processors and personal computers.

Yet in many cases the use is not advanced or intensive. It concludes that the British slow pace in office automation is due to a number of factors: "This strategy might be likened to a technical planning approach but there is some plan in place... a consistent pattern is emerging and that is that the financial, insurance and the insurance industries are showing a keen awareness of the effects of office automation."

The Frost & Sullivan report also suggests that over the next decade, U.S. businesses will invest between \$4,000 and \$10,000 per office worker on office automation equipment, that adds up to a potential of \$300m.

But automation for expense tends to be in the user's hands, in 51 per cent of cases, this came from chief executive or board level, in 34 per cent of cases from office automation management and in only 9 per cent of cases from the user department.

cases, this came from chief executive or board level, in 34 per cent of cases from office automation management and in only 9 per cent of cases from the user department. "It depends on the size of company, Eos found. All companies agreed that the chief justification is bound up with offering support to a key function—word processing in a typing pool, for example, or proposal calculation and printing in an insurance office."

After that it was clear that smaller firms needed better justification in terms of cost savings than the bigger companies, many of whom were buying equipment with the chief aim of gaining practical experience.

The results of the UK Government trials suggest that true cost savings will be hard to identify.

Mr Cliff Hudson, of British Rail Engineering, which used equipment supplied by Information Technology, said: "If you are after savings in a conventional sense, then you are on a loser" and went on to suggest that management should view automation as a way of generating wealth rather than cutting costs.

Mr Sam Radcliffe of the Greater London Council (Rank Xerox) said automated systems should be seen in terms of value added benefits. It had not seen any real savings.

On the other hand, officials at Cambridgeshire County Council using IBM equipment maintained that in every department where an office system had been installed there was a subsequent cost justification to introduce more equipment.

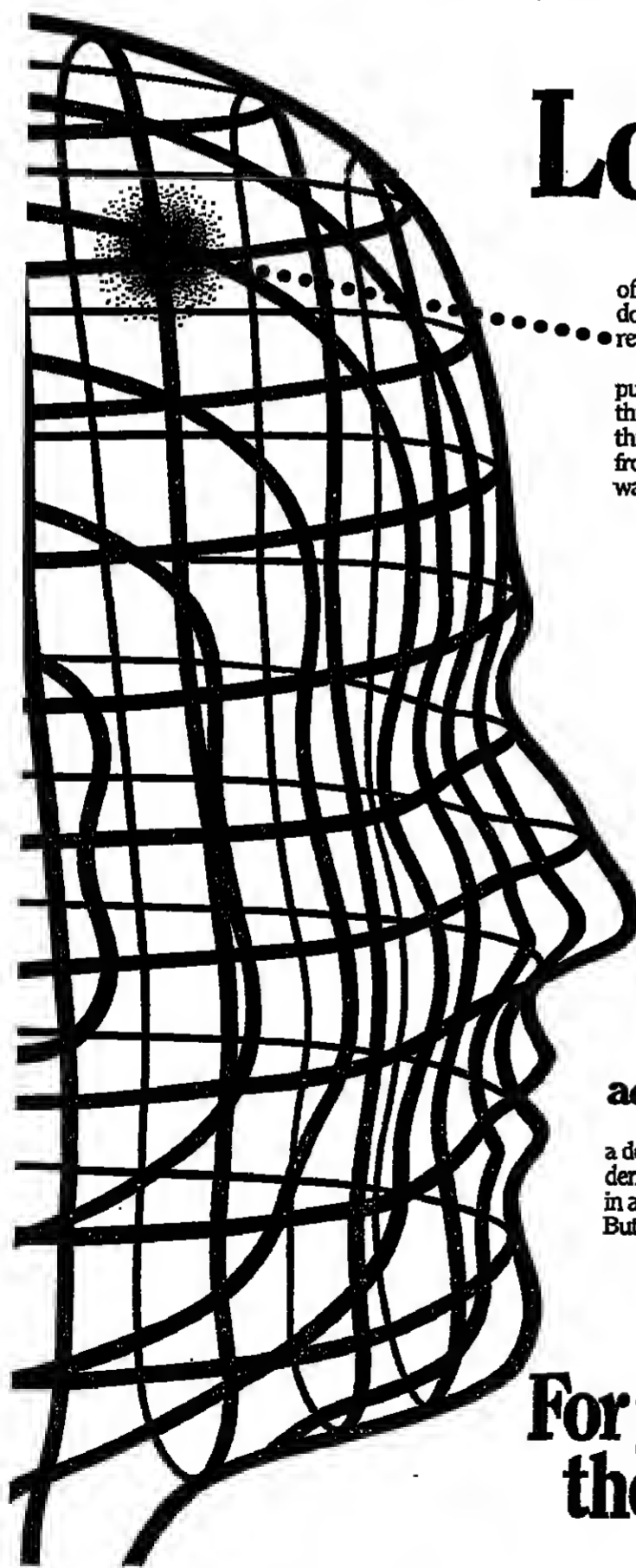
So it seems that for those who can afford it—or who can help the customer to see new ways in which office automation can improve business effectiveness.

But "cost-justification" will remain a problem for the small company with limited resources. Perhaps, suggests Ms Bird of Eos, manufacturers and retailers should consider renting or leasing equipment on favourable terms to small companies to their mutual benefit.

"Marketing IT to UK-Businesses, Eos, Faraham Common, Slough, £50."

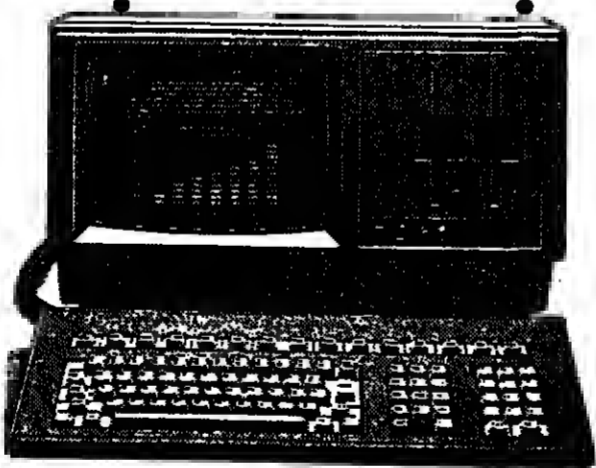
"The U.S. professional executive-workstations market, Frost & Sullivan, London, \$1,275."

# The Word Processor is dead. Long live the Business Processor.



Word Processors meant a revolution in your office when they were first introduced. They still do. The trouble is that for most manufacturers the revolution is over.

Harris thinks differently. Our reputation for pushing back the limits of technology means that through our office systems, we can offer something more. Business Processing. As far advanced from the Word Processor as the Word Processor was from the typewriter.



### It's an advanced word processor.

Our Business Processor is as easy to use as a dedicated Word Processor. All your correspondence, all your reports, memos - can be produced in a fraction of the usual time by your secretary. But that isn't all.

## For your information, the name is Harris.



### It's a professional computer.

Managers and Executives can use the Business Processor too - it accepts instructions in plain English. And with it, they can review all the data - accounts, files, sales, reports - that your business relies on the moment it is entered on your system. Your clerical staff will welcome the way it will simplify their routine.

### It links with your mainframe computer and bigger networks.

The Business Processor is designed to link in with your mainframe and minicomputers, like the Harris H Series, to give you instant access to all that is going on in your company as it happens. And with System 5000 you can link all your staff into an intercommunicating system - putting them in touch with each other even if they are on other sides of the building - or other side of the world.

### It's an integral part of the Thinking Office.

And Business Processing can lead you to the Thinking Office. A complete system, from Thought Processing - a way to capture and edit all your good ideas - to a network. And with a Business Processor, you already have the heart of the Thinking Office.

### The team behind your office.

We have teams of experts waiting to help you. Experts in training your staff, in helping you get the best from our equipment, Engineers, Specialists of all kinds. All there to support you. They're what make our approach different.

### Phone for the book.

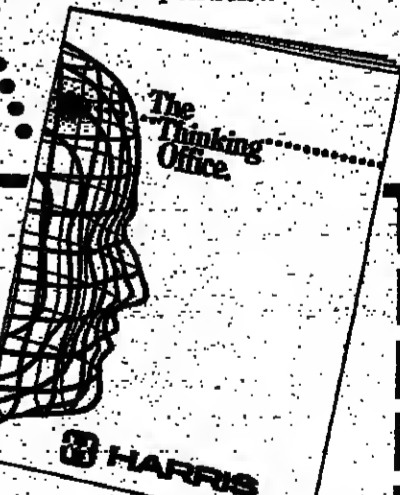
Find out more about the Business Processor and Thinking Office, with our new book. It's free. Phone your nearest Thinking Office Advisory Service or return the coupon below and discover all the possibilities of the Thinking Office - and how Harris will help you.

- Harris - UK Headquarters  
Harris Systems Ltd.  
153 Farnham Road, Slough, Berks.  
Tel. 34666. Telex 3481174
- London Office  
Harris Office Systems  
171 Grays Inn Road, London WC1X 8UE.  
Tel. 01-837 6400. Telex 297689
- DRG/Barratt - Regional Offices
- Aberdeen 822008     Birmingham 359 0161
- Dundee 69351     Breaston 03317 3921
- Llningston 37351     Northampton 46331
- Glasgow 771 0851     High Wycombe 35991
- Leeds 456944     Bristol 514777
- Manchester 273 7421     St. Albans 35151
- Leicester 543557     Basingstoke 54331
- Tombridge 366661
- Leamington Spa 34371
- Peterborough 237733
- Swindon 36888
- T&D Norton - Ireland
- Dublin 724455

I would like a copy of your free new book, The Thinking Office, showing how Harris Thought Processing, Business Processing and executive computing can help my company achieve greater efficiency and improved profits.

To: Harris Office Systems  
171 Grays Inn Road,  
London WC1X 8UE.

Name (Mr/Ms/Ms)  
Title  
Company Name  
Address  
Postcode  
Tel.



FT 04